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ABSTRACT

With a central theme of how people create a means to communicate reliably, and based on language-making exercises that touch students' imaginations, this book aims to interest students in language and how language is made. Since students like codes and ciphers, the book begins with secret writing, which is then used to reveal the foundation of English. The second part of the book presents the basic conventions of English, and shows how--by altering these conventions--a person can disguise meaning (in codes and ciphers), and by following the conventions--a person can communicate clearly. The third part of the book uses knowledge of these conventions of language to figure out difficult passages in English, from Chaucer to Joyce and Cummings. The fourth part of the book is an examination of other kinds of language, applying the conventions of language to systems of numbers and picture-writing (such as traffic signs and comic books) to see if they are languages, too. This part functions as a preparation for the fifth section of the book, on sending a message into outer space, in which students have the challenge of deciphering messages sent out by scientists and then deciding on their own messages. A 16-item bibliography is attached. (SR)

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Keys to the Mysteries of Reading and Writing

by Peter Sears

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Secret Writing: Keys to the Mysteries of Reading and Writing

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Thanks

I want to thank Ron Padgett, the editor of this book. First, for the basics: clarify, condense, and restructure, the lucidity services all good editors provide. Ron Padgett contributed much more: he added, questioned, provoked, and created. And what a jolly, supportive taskmaster! The fun is what I will remember most. My gratitude centers here, on the pleasure of our writing this book.

I also want to thank my friend Christopher MacMillan, another fine writer and editor, for making me aware of the importance of secret writing. This book grew out of that awareness.

To my sister Missy and my brother Jay

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A Note to Everyone: About the Exercises

Throughout this book there are exercises. Some are thinking exercises, some are thinking and writing or drawing exercises. They're all self-explanatory.

Each exercise is numbered. "Exercise 2.1" means that it's in chapter 2 and it's the first one in that chapter. "Exercise 3.5" means that it's in chapter 3 and it's the fifth one in that chapter. And so on.

At the end of each exercise there's a symbol, like this: •. I put it there as a stop sign, to remind you to stop reading and to start thinking about your response. If you run the stop sign, you'll skid right into my response to the exercise. Yes, in most cases my response is right beneath the exercise question, because in writing this book I became a student too.

It's better for you if you stop and think of your own response before you read mine. Your response will usually be different from mine. That's fine. Most of the exercises ask questions that don't have just one correct answer. For instance, some of them ask for your opinion, and your opinion is as good as anyone else's (including mine).

So remember: when you see the • symbol, you're supposed to stop and think (and sometimes write or draw) before you continue reading.

A Note to Students

This book is about secret language and the secrets of language. One kind of secret language is codes. Ciphers are another. The book starts with codes and ciphers. First we find out about the language of codes and ciphers, and then we see what codes and ciphers tell us about our own language. Secret writing tells us a lot about English. It tells us how we make English and other languages. We then use this information to decipher hard passages of English.

Then we look at other kinds of languages, not just other written languages like Hebrew and Chinese, but languages of pictures and numbers too. Egyptian hieroglyphs and arithmetic. Comics and traffic signs. There is a lot of odd stuff in this book: cattle brands, petroglyphs, tap dancing, symbols, Indian sandpainting, computer graphics, and slang. Why all these? Because they are language systems: they are ways to communicate meaning.

The last three chapters of the book are about trying to communicate with aliens. This, I think, is the most interesting question about language. What do you think? We have already sent messages into space. Did you know that? We will look at a space message that scientists have sent, and then we will decide what message we think should be sent into space.

Throughout the book there are exercises so that you can try out your ideas about the material. I do the exercises too. At least I try to. These aren't the kind of exercises you can get wrong. We just try out our own ideas about deciphering and inventing language systems.

I've had a lot of fun writing this book. I hope that comes through to you.

A Note to Teachers and Parents

This book grew out of an article I wrote for *Teachers & Writers* magazine, "Teaching Language by Invention." The article, in turn, came from years of teaching English and wondering how to interest students in language, for I have long been convinced that *the way language is made* should be the fundamental subject of an English course. Most textbooks, unfortunately, are not written to interest students in how language is made. Instead, English textbooks state and demonstrate the principles of proper English usage. They are basically reference books with exercises. I wanted to do an interesting schoolbook about language, with English at the center.

I scrambled about, borrowing from here and there, inventing some exercises of my own. I found that my students responded to language-making exercises because the activity touches their imaginations. The best of these exercises were developed from specific examples. These examples required some figuring out before inventing one's own language system. Thus the basic idea of this book: decipher the language example and then invent one's own system based on it.

Collecting good exercises and doing a sensible book are two very different matters. This I learned the hard way, through one false start after another. Thanks, though, to help from teachers and students, I managed to assemble what I like to think is a coherent sequence natural to student thinking.

The book begins with secret writing (chs. 1-2). Students like codes and ciphers. I use secret writing to demonstrate how regular writing works: codes and ciphers reveal the foundation of English.

The second part of the book (chs. 3-6) presents the elements of this foundation of English—and of other languages for that matter. The basic elements of language I call "conventions." The five conventions of language are 1) a series of basic elements, 2) a notion of spacing, 3) use of direction, 4) establishing meaning through sequencing, and 5) use of signaling devices for further clarifying of meaning. I show that by altering these conventions one can disguise meaning: these disguises take the form of codes and ciphers. On the other hand, one can communicate clearly by following the conventions.

The third part of the book (chs. 7-12) uses this knowledge of the five conventions of language to figure out hard passages in English, from the Middle English of Chaucer to the experimental modern writing of Joyce and Cummings. These exercises provide deciphering challenges for the reader, not abstract literary questions.

The fourth part of the book (chs. 13-16) is an examination of other kinds of language. I apply the conventions of language to systems of numbers and picture-writing to see if they are languages too. Traffic signs and comic books are among the surprising subjects of these chapters.

This fourth section of the book is a preparation for the fifth and final part (chs. 17-19): the sending of a message into space, which is an interesting issue of language and one that students take to readily. Students examine the messages we have sent out and then decide on their own messages. Before inventing their own, however, they have quite a challenge in deciphering the messages sent out by scientists. And so do I.

However far the subject matter of the book may range, the central question throughout is how people create a means to communicate reliably. The book is laced with exercises in deciphering and language making, the breaking and making of language, with the emphasis on the systematic nature of language.

Whatever exercise I ask the students to do, I usually do too — or say why I don't. Thus, there is no need for teachers using the book to do any additional work. The book requires no special preparation. Nor are there any answers in the back. All the questions are dealt with openly, on the spot. It is all self-explanatory. It gives you the opportunity to become a student yourself.

I respond to the exercises not with the distant grandeur of objective authority but, instead, as a student might, with everything from enthusiasm to utter frustration. I participate like this, directly, to encourage students to participate. I hope my example will give them confidence to engage their own ideas fully. This approach is ultimately more important to me than the novelty of the subject matter.

I have found that students are most engaged by language study that calls upon them to make language. As long as students regard language as a rigid body of opaque, restrictive rules, they're not going to be very interested. But draw them into seeing language as something that people have created and that they themselves can create, and their attitude toward the study of English will change dramatically.

I believe this book will work as either a regular text or a supplementary text. To claim that a book will work as a supplementary text—without teacher supervision—sounds, admittedly, arrogant if not foolhardy. Still, having experimented with these exercises in the classroom, I feel sure that secret writing can be used this way, and used well.

Naturally, though, the book will work better with your support. However encouragingly I manage to write, it is not enough to prevent some students from second-guessing themselves and needing reassurance or a nudge. Students often express this need by asking a question. Your help is useful then.

Finally, is there a kind of student for whom the book is particularly helpful? I raise this question because many books for students are fashioned for a student of a particular level; content that is supposedly too hard or too easy is ruled out. I wonder if such categorizing responds to the needs of real students. I question whether this focusing actually helps students and teachers. An editorial approach that limits student interest and imagination is overly prescriptive. So I have established only one boundary: a minimal vocabulary level. Difficult words in this book are followed by a synonym in parentheses. Otherwise, the effectiveness of the book is not limited to students of a particular ability. The many open-ended exercises will take truly able students as far as they want to go. Likewise, the average student—if there is such a creature—will have plenty of occasions for success and stimulation. And most important, there is nothing about this book to make a student feel stupid. The weakest of students can feel as much at home in it as the gifted student. Engagement is a matter of interest, not ability.

I am concerned more about attitude than ability. I intend to motivate *all* students, irrespective of ability. A bright student can become just as bored as a less able student, and a bright student too can hold back or feign disinterest, if only for peer acceptance. Less able students see themselves as having little choice about their attitude toward learning because success is so often the only permission for showing interest. So I make sure that the book fully supports the hesitant student, either the one who lacks confidence and accepts meager accomplishment all too readily, or the one who has been so unsuccessful that the only posture to assume is aggressive disinterest. This book, I believe, will engage the most hesitant student.

CHAPTER 1

Hangman

Have you ever met a person who makes and breaks codes? I haven't. At least I don't think I have. But you know, if you were a professional codemaker or codebreaker and somebody asked you what you did for a living, you probably wouldn't say. You might not be allowed to, and you might not want to. Perhaps you would dodge the question by replying, "Oh, I work for a company" or "I work for the government." Your job might involve guarding valuable information. You might have the responsibility of conveying valuable information to key people.

EXERCISE 1.1

Imagine you are a professional codemaker and a company hires you to protect a valuable formula. How would you do it and what would you want to know in order to maximize protection? •
(Think of your answer before you read mine.)

My response to Exercise 1.1

I would make up a code, memorize it, enter the formula in code in a computer under a false heading, and tell as few people at the company as possible. How to maximize protection beyond that would depend on all sorts of things about the company.

I had thought that people who work with codes just tried out different ideas to make a code or to break a code. Then I found out that these people have their tools, like everybody else. One tool the codebreaker has is the Frequency Table. This "table" lists how frequently the letters of the alphabet appear in words. I can't imagine how many words must be used to figure out the sequence of most frequently used letters of the alphabet, but there really is such a list.

I learned about the Frequency Tables the hard way. Do you know the game Hangman? If you don't know the rules, here they are. It takes two people to play Hangman. One person thinks of a word of at least six letters and which is not a name. This person draws the same number of spaces as there are letters in the word—for example, for the word "hockey" six spaces, as well as a gallows, above the spaces:

_ _ _ _ _ _

The other person starts guessing letters, one at a time. If the guess is correct, the person who knows the word puts the letter in the right place—for example, the guess *E:*

_ _ _ _ E _

If the person guessing says a letter that is *not* in the word, the other person draws a leg. Another wrong guess means another leg. Then the wrong guesses go: body, one arm, the other arm, the neck and, finally, the head. That means hanged. So the person guessing letters has to guess all the letters, or the word itself, before guessing seven wrong letters, because the seventh letter is the head.

Governor Padgett's Variation: In Hangman, write down the missed letters too. If you get hanged, you can get a last-minute reprieve if you can arrange the missed letters into a word. This introduces a new strategy into the game—a safety net, so to speak.

I knew only that it is a word-guessing game when a friend of mine asked me if I wanted to play. I said, "Sure." My friend said, "Give me a really hard word, one that I don't know the meaning of, and make it as long as you want. I bet you I can guess it."

No way, I figured. I picked a long word I found in the dictionary: CONCATENATION, which means "a linked series or chain." I was sure he wouldn't guess it. I made the thirteen spaces for the letters.

My friend guessed six correct letters before he guessed a letter *not* in the word. I couldn't believe it! He guessed in order, *E T A O N I.* So he had

_ O N _ A T E N A T I O N

All he had to guess was the *C* and he would have it. But he didn't know the word, so how could he guess the right letter?

He guessed *S* and got a leg. He guessed *R* and got another leg. He guessed, in order, *H*, *L*, and *D*. All wrong. He had two legs, the body, and two arms. If he missed again, he would have the neck — and one more miss after that would mean he was hanged.

He guessed *C*. He won. I was mystified.

Later he told me about the Frequency Table. Here it is. The letters are listed in the order of their frequency. A group of letters means that the frequency of the letters is approximately the same.

E T AO NIS R H L D CU FPMWYBG KQXJZ

Knowing the Frequency Table was only half of my friend's trick. The other half was to trick me into giving him a *long* word to guess.

EXERCISE 1.2

Can you see why a long word makes the Frequency Table more valuable? •

My response to Exercise 1.2

The longer the word, the more chances there are for the most common letters to appear.

It was my turn. I had the sequence of letters my friend had guessed, but when I asked him to give me a word, I forgot to specify a *long* word. He gave me a six-letter word. I guessed as he had, in order, *E T A O N I*. The fourth letter was *T*. None of the other letters was in the word. I had two legs, the body, and two arms. Two more wrong guesses and I was hanged. I guessed *R*. The first letter was *R*.

R _ _ T _ _

EXERCISE 1.3

What letter do you think I should have guessed next? •

My response to Exercise 1.3

My friend had guessed *H*, *L*, and *D* before guessing *C*, but should I guess these consonants when I hadn't yet established the vowel or vowels? No, I figured. I guessed *U*.

No *U*. I didn't know what to do. I guessed *D*. No *D*. I was hanged. Can you guess the word? If I had been lucky and guessed *H* instead of *D*, I would have had

R H _ T H _

EXERCISE 1.4
Now what would you guess? •

The word is "rhythm." My friend had stumped me with a simple word. At least it sounds simple. It is easy to say and it is a common word. But its spelling isn't simple at all.

EXERCISE 1.5
What word do you think would be hard? It has to have at least six letters and may not be a name like "Dallas" or "Melvin." •

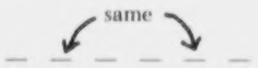
My response to Exercise 1.5
A word that looks simple but might be hard is "through." It is short, has only one syllable, and the letter combinations are tricky, I think. However, the letters are pretty common.

EXERCISE 1.6
What word do you think looks like it would be hard because it is uncommon and long, but, with the help of the Frequency Table, might not be hard at all? •

My response to Exercise 1.6
You already know the word I came up with: "concatenation."

Playing Hangman is like trying to break a code. Hangman is easier, though, because the other person has to tell you if the letter you guess is in the word and has to put the letter in the right place if it is. If you are trying to break a code, no one tells you if you are right or wrong. Instead, you have to try new ideas. If you get a possible solution to a word, then you try out the letters in other words. Also you may have other information that will help you.

For example, let's say you intercept a coded message that appears to be a six-letter word, and you have reason to believe that the word is the name of a major city in the Northeast. In looking at the coded word, you see that the second letter and the fifth letter are the same. So you have:



EXERCISE 1.7
What do you think the word is? •

My response to Exercise 1.7
There is a pretty good chance that the word is "Boston."

The word is composed of the letters *B*, *o*, *s*, *t*, and *n*. Most of these letters are pretty common, high up in the Frequency Table. If you have enough other messages in this code to establish what you think is a fairly reliable frequency sequence, then you can see if the first letter of the coded word (*B*, here) is fairly uncommon, at least in comparison to the others.

A professional codebreaker has a list of the frequency of the letters of the alphabet and also lists of the frequency of certain combinations of letters.

EXERCISE 1.8
Can you think of a common combination of letters? •

My response to Exercise 1.8
Common combinations of letters are "ing," "tion," and "ed." Knowing common letter combinations and the Frequency Table helps a professional codemaker invent a good code. For example, if the codemaker wants to enter a valuable formula in a computer under a key word, the codemaker would be smart to pick a word that is not easily guessed. A good word might be one that does not include common letters or common letter combinations. The seven most common letters are, as you know from the Frequency Table, *E T A O N I S*. Let's rule these out, along with the three most common letter combinations, and think of a word to be the key word for the codemaker.

EXERCISE 1.9
Would ruling out the seven most common letters also rule out the three most common letter combinations? •

My response to Exercise 1.9
Yes, ruling out the seven most common letters would rule out the three most common letter combinations because each of the three letter combinations include at least one of the seven most common letters.

EXERCISE 1.10
Can you think of three words of at least six letters that do not include any of the seven most common letters? •

My response to Exercise 1.10
Three such words are "church," "chubby," and "frumpy."

Does "frumpy" count? Is it in the dictionary? I'm not sure—but I don't want to check because I don't know if I can think of another word. With only *u* of the vowels (I'm not counting *y*), finding a word with these letters is hard. I guess this is the kind of information that codemakers discover quickly.

Still, wouldn't it be great to be able to hide messages! Finding a word for entering a valuable formula on a computer is one thing. What I would like better is being able to send a message to a friend so other people couldn't read it, even if they found it. I am not as interested in hiding as I am in disguising my meaning. How about you? Have you ever fooled around with secret writing? Have you and a friend ever invented a code so that you could exchange messages without anyone else knowing what you are saying?

EXERCISE 1.11
What would you use secret writing for? You don't have to say. Just think about it. •

That is what the next chapter is about, secret writing.

CHAPTER 2

Secret Writing

Can you read this?

TEEM EM TA HCNUL

Reading it forwards doesn't make sense. How about reading it backwards?

LUNCH AT ME MEET

This doesn't make sense either, but we are getting somewhere. We now have four words. Just the sequence of words doesn't make sense. Can we make sense out of the four words by rearranging the sequence?

Maybe you just look at the four words and come up with a sensible sequence. Maybe you try out all the possible combinations. One way or the other you are going to come upon the possibility

MEET ME AT LUNCH

You have not only solved the problem, but you have also confirmed a fact of the English language: English reads from left to right. That is obvious to you. Yet that is not true of all languages. In the next chapter we are going to look more into what codemaking tells us about the English language.

For now, let's look again at the secret message TEEM EM TA HCNUL. To hide the meaning of the message, the codemaker simply reversed the order of letters in each word. That's all. Nothing else.

EXERCISE 2.1
Can you think of another way to make the message secret? •

My response to Exercise 2.1
Another way to make the message secret is to write all the words together.

You probably thought of this way and other ways, too. If you write the words together, you would have

TEEMEMTAHCNUL

That's certainly harder to read, and in using this idea we confirm another fact about the English language: we indicate the end of a word by leaving a space before beginning the next word. This fact is obvious too.

Another way to make the message harder to read is to make up another alphabet and write the message in this new alphabet.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
R M G K Z J Q C W E P Y B U T H L A V X D N I F O S

In my new alphabet the secret message looks like this:

XZZBZBXRCGUDY

That is harder to read than the way it was before.

EXERCISE 2.2
Make up your own secret alphabet and write the message in it with all the reverse-spelled words written together. •

Let's summarize what we have done to make the message MEET ME AT LUNCH hard to read:

1. Reversed the order of the letters in each word;
2. Written the words together;
3. Written the message in an invented alphabet.

What we have done may be, in your opinion, not very complicated, but pretend you don't know our method. Would you be able to figure out the meaning? I couldn't.

Just for the fun of it, read your coded message aloud a few times. Pretend, as you say it aloud, that it really is *your* language, the language you speak all the time. Notice how this makes you "feel" different.

Now say the message in English. Can you describe how it "feels" to speak English, your own language?

Notice, by the way, that in normal talk we don't leave spaces between the words, the way we do when we write. Why don't we leave spaces between words when we talk?

Finally, when you said the coded message aloud, did it remind you of a foreign language? Which one? Or does it make you think of a language from outer space?

We have written a secret message. You might call it a coded message.

Many people think of code as the way to make a message secret, and code is the word we use for any secret writing. Actually, though, there are three ways to make a message secret:

Code
Cipher
Stenography

Stenography is the hiding or concealing of a message.

Invisible ink is a method of stenography. Have you ever used "invisible ink"? It's easy. Instead of regular ink, use lemon juice or milk. When it's dry, heat the paper over a flame or light bulb (but be careful that you don't burn yourself or the paper). The heat will cause what you've written to emerge, in brown letters.

Another way to write invisibly is with a typewriter. Insert a piece of paper with a piece of carbon paper on top. Type directly onto the back of the carbon paper. What you type will appear on the paper underneath, but you won't be able to read it until you take it out of the machine and remove the carbon sheet.

A third way to write invisibly is with a word processor. Of course you have to know how to use the word processor first. To write invisibly with it, just turn off the monitor, so you won't be able to peek at what you've written.

EXERCISE 2.3

Using any of these three methods, try an experimental writing technique called "freewriting." There is only one rule for freewriting: write as fast as you can, nonstop, for a set period of time, such as five minutes. You can write *anything*, as long as it's words and you keep going without stopping. Don't worry about spelling or neatness or grammar. Just try to make your hand write words as quickly as your mind thinks them.

When you've finished, bring out the invisible writing by heating up the invisible ink, by taking the carbon sheet off, or by turning the monitor on. •

Are there any words you didn't remember writing? Did you write anything you didn't expect to write? If the answer is yes, it shows that you are able to write things you didn't know you could, things that were "hidden" from you.

Stenography is a method for making a message secret, but it is not a method of secret writing. There are two methods of secret writing:

1. *Cipher* is the method of secret writing in which *the individual letters* are jumbled or replaced by other letters, or numbers, or symbols.

2. *Code* is a method of writing in which *a group of letters* or numbers is substituted for syllables, words, phrases, or sentences.

"Code" and "cipher" sound a lot alike, so let's look at an example. To make the message MEET ME AT LUNCH hard to read, we jumbled the letters by writing each word backwards and running them together. And we replaced each letter with something else from the alphabet we invented. So we did what the definition of "cipher" says.

What we did is called "enciphering." You *encipher* a message when you make it secret by the cipher method. When you figure out the meaning of an enciphered message, you *decipher* it.

EXERCISE 2.4
What do you think the words might be for writing a message in code and for figuring out a message in code? •

My response to Exercise 2.4
When you make a message secret by putting it in code, you *encode* the message. When you figure out the meaning of an encoded message, you *decode* it.

So, the cipher method has two possibilities: jumbling the letters (which is called "transposition"), and substituting a letter, number, or symbol for each letter (which is called "substitution"). The code method has only one method, substitution, but you can substitute one or a group of letters or numbers or a combination of them for a syllable, a word, a phrase, or a sentence. In a sense, you can do anything you want to make figuring out the encoded message as hard as possible.

Let me show you an example in which I restrict the options to using only one or more numbers for each word.

MEET	7
ME	314
AT	88
LUNCH	13

So, MEET ME AT LUNCH becomes 7 314 88 13.

EXERCISE 2.5
Which do you think is the more effective method of secret writing, the cipher method or the code method? •

EXERCISE 2.6
Which of the two methods do you think involves less information to

write down, lug around, and protect? •

Code may be more effective than cipher for making a message hard to figure out, but it certainly involves more information to write down, lug around, and protect. With the cipher method, you need only establish instructions for transposing (scrambling) the letters and, if you want, a different alphabet. But with the code method, you have to encode all the words you are going to need either as a word, phrase, or sentence. That's not the sort of thing someone is going to memorize easily. In fact, professional codemakers usually write information in what is called a "codebook."

The codebook is larger than what you probably imagined because the example of a code you have here is pretty simple. The example is simple because each word has only one coding. The code can be made even harder, and often is, by establishing two or three *different* ways to encode certain words. This is done to prevent the use of the principle of the Frequency Table (which you read about in Chapter 1).

For example, the word ME in the message MEET ME AT LUNCH might be encoded as 10 or 46 besides 314 as it is in the encoded message. So you would have three ways to encode the message:

7 10 88 13
7 46 88 13
7 314 88 13

Then, what if you go ahead and add two further ways to encode the word AT? Suddenly, you have many ways to encode a simple, four-word message. Think what possibilities might come up for encoding a much longer message! And remember, I encoded only each word. What if for a longer message we had also encoding for certain syllables, phrases, and sentences? That would become very complicated to encode, much less to decode.

Yet people do this for a living, not just making up codes but trying to break them! Many codemakers are also codebreakers, too.

EXERCISE 2.7
Do you think you might like this kind of work? •

EXERCISE 2.8
Make up your own coded version of MEET ME AT LUNCH in which you mix letters and numbers and have at least two ways to encode one of the four words. •

EXERCISE 2.9

Write a brief conversation between two spies. Then go back and encode their words. Read it aloud to friends and watch their reactions. •

CHAPTER 3

Conventions

You have enough information now about ciphers and codes to send a secret message to a friend. This same information can also help you to understand the English language. Maybe that doesn't make sense, but remember, a code or cipher is based on a language. Your codes and ciphers are based on English. When you make a coded or enciphered message, you alter the language in order to hide your meaning. So if we look at what we did with the enciphered message of MEET ME AT LUNCH, we will be able to spot basic facts about English.

Many of these facts you already know because you know English. You may even know every one of the facts. But once we add them all up and look at them, you may find that you actually know more about language than you thought.

For example, when we invented a secret alphabet to make the enciphered message of MEET ME AT LUNCH even harder to read than it already was, we invented a new use for what is primary to any language: an alphabet. Our alphabet is the basis of our language. That is obvious. We form all our words from the letters of the alphabet. So every language must have an alphabet, right?

Wrong. We have basically the same alphabet as many other languages, such as Spanish. And there are other alphabets: the Russian language has a different alphabet from ours. But there are languages that have no alphabet.

EXERCISE 3.1
Can you think of a way to invent a language without an alphabet? •

If a language doesn't have an alphabet, it still has to have something to begin with. It must have some sort of elements from which various meanings are made. Every language has a series of basic elements. So the question is, what sort of series of basic elements can that be, if it is not an alphabet?

Chinese is a language with another kind of series of basic elements, and Chinese isn't the only one. But the others are like Chinese in that they begin with pictures, not letters. English is one of many "alphabet languages." Chinese is one of many "picture languages."

Chinese is composed of "characters." Each character represents a thing or an idea. Here is the character for "sun" and the character for "moon." Put these two together and you have the character for "bright."

Sun 日 and moon 月 together mean "bright." 明

Pretty good, huh? Here are some others.

Woman 女 and child 子 together mean "good." 好

Brain 田 and heart 心 together mean "think." 思

An eye 目 on two legs 儿 means "to see." 見

So a Chinese character can have either just one part, like the character for "sun," or it can have two parts, like the character for "see," or more.

This combining of parts to make a Chinese character resembles our combining of letters to make a word. It also resembles our combining of words to make a new word. For example, we combine "basket" and "ball" to make "basketball." But if you see a letter in our alphabet being the equivalent of a one-part Chinese character, then there is a big difference between Chinese and English. A one-part Chinese character has a meaning. "Moon" is an example. But a letter in our alphabet doesn't necessarily have a meaning. In fact, the only letters that do are *A* as in "a book" and *I* as in "I sent you a message" and maybe *O* as in "O great chief . . . ." Our letters are not pictures of ideas.

Now you can see why the Chinese language is sometimes called "picture writing" or "idea writing."

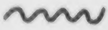
EXERCISE 3.2

Can you invent two of your own one-part characters and what each means? •

My response to Exercise 3.2

My two one-part characters are

sky

water 

EXERCISE 3.3
Can you invent your own two-part characters and explain how each is made? •

My response to Exercise 3.3
Here are my two two-part characters.

Basket and ball together mean "basketball."

Play and laugh together mean "fun."

Every language begins with a series of basic elements, whether alphabetic or pictorial. That is our first property of language. Let's see if we can figure out another one from what we did to encipher the message MEET ME AT LUNCH. Do you remember another method we used to make the message harder to read? We ran all the words together.

TEEM EM TA HCNUL became TEEMEMTAHCNUL

What we did tells us another fact about English: in English we leave a space between words to indicate the end of one word and the beginning of another. The same is true in Chinese. "Sun" by itself has one meaning, but when it is combined with "moon," the meaning becomes "bright." If, on the other hand, a space is left between the two characters, they mean "sun" and "moon."

So we have two facts about our language:

1. A series of basic elements
2. A space between words

There is another basic fact of language to be seen in our enciphering of the message MEET ME AT LUNCH.

Before we started tinkering around to try to make the message harder to read, it had already been enciphered into TEEM EM TA HCNUL. In solving this puzzle, I said that you had also established a fact about English, that English reads from left to right. Not all languages read from left to right. Arabic and Hebrew for example, read the opposite way, from right to left. Here is an example from Hebrew.

ליד החלון ישבה היא
to the window next sat she

The Hebrew way of writing would be like writing

HƆИU⅃ TA ƎM TƎƎM

EXERCISE 3.4
Do you think this is harder to read than TEEM EM TA HCNUL? •

My response to Exercise 3.4
No, I think it is easier to read. It is easier for me anyway because some of the letters point the way to read it, from right to left.

The fact that Hebrew reads from right to left and that English reads from left to right establishes a *third* property of language, *direction*.

We have been looking at the direction on the horizontal. There is also the vertical. How do we read English? Obviously, we read from top to bottom. But which do we do first, read from top to bottom or from left to right?

Sure, we read first from left to right and then from top to bottom. We read across one line from left to right, and when we come to the end of the line we go down to the next line, and on down the page, as you're doing now.

But do all languages read the same? Whether they begin on the left side or the right side, do they read across the page and then down—or up—or do they do it another way? Take a look at the Chinese in figure 1.

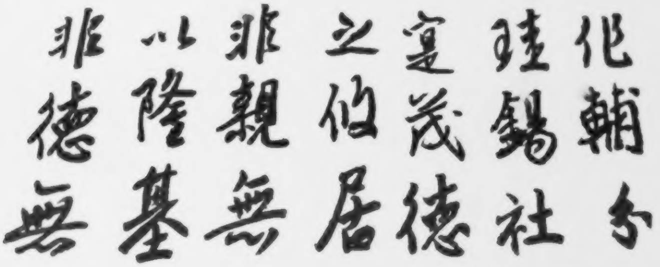


Figure 1

EXERCISE 3.5
Which way do you think you read this, in a horizontal direction or a vertical direction? What is your guess? •

Wouldn't you know it, you don't begin on the horizontal as you do in English. Instead you begin on the vertical. You read classical Chinese from top to bottom. And you don't begin on the left. You begin on the right. So you read down the page in columns, and the columns go from right to left. (To get in step with the modern world, the Chinese are now trying to change their system. We'll see how well it works.)

Try to imagine what a traditional Chinese book looks like. Chinese books are backwards from ours. The front of the book is where you would find the back of an English book.

Direction in Chinese is very different from direction in English. Still, each language has its own simple pattern of direction. So direction is to be added to our list of conventions of the language.

1. Series of basic elements
2. Space between words (or "word pictures")
3. Direction (horizontal and vertical)

Just these three conventions of language provide all sorts of possibilities for beginning to invent a language. For example, for the first convention you could use the English alphabet. Then for the second convention, instead of spacing, you might use a hyphen, as is done sometimes in code (18-472-812-397). Then for the third convention (direction), you might begin on the right and move across the page to the left, as in Hebrew, but instead of moving from top to bottom, you might choose to go from bottom to top.

Following those directions, the message MEET ME AT LUNCH. I HAVE SOMETHING VERY IMPORTANT TO TELL YOU. DO NOT BRING ANYONE WITH YOU would look like this:

UOY-HTIW-ƎИOYИA-ӘИIЯB
TOИ-Oᗡ-UOY-⅃⅃ƎT-OT-TИATЯOԳMI-YЯƎV
ӘИIHTƎMOƧ-ƎVAH-I-HƆИU⅃-TA-ƎM-TƎƎM

If we scrambled a few of the letters and perhaps dropped the hyphens, this new language would look more like a code or a cipher than a language. But isn't that the point about codes and ciphers? They *are* languages. The difference is that a code or cipher is meant to ***hide*** the meaning, whereas a language such as English or Chinese is meant to *convey* the meaning. The difference is in purpose, not in the way they are made. Codes and ciphers, like English and Chinese, are developed from the same three conventions: series of basic elements, spacing, and direction.

CHAPTER 4

Sequencing

We have identified three conventions of language, three ways by which people make language. As important as these three conventions are, they are not enough to make a language as sophisticated as the English language that you know. You know a lot about English that goes well beyond these three conventions.

Perhaps we can spot other conventions in the message MEET ME AT LUNCH. When we first saw this message, it had been enciphered into TEEM EM TA HCNUL. To decipher it, we first read it backwards: LUNCH AT ME MEET. We then saw that the meaning of the message was MEET ME AT LUNCH.

EXERCISE 4.1
What did we do when we changed LUNCH AT ME MEET to MEET ME AT LUNCH? •

My response to Exercise 4.1
We put the words in their proper sequence.

Did you phrase your answer differently? You may have—with just as good an answer—for there are lots of ways to say "proper sequence." You may have said that the change in the sequence of words was to make the words go together correctly. Or, to make the relationship of the four words clear. Or, to make the meaning clear. Or, to make sense out of the words. The point is that there is a definite connection between the meaning and the sequence of the words.

A word has its individual meaning. This is the meaning you find in the dictionary. A word has further meaning. This is the meaning it gains by being put together with other words in a particular sequence. Like what, for example? Like a sentence. A sentence is a series of words that communicate a meaning. How? By the sequence of the words. The sequence creates a series of relationships among the words. Each relationship creates a meaning. All the relationships of all the words in the sentence add up to the overall meaning of the sentence. If we want to change its meaning, we can change either a word or the location of one of the words already in the sentence. If we are given a bunch of words and asked how they might go together, we try to find a sequence for the words that creates an overall meaning.

When we are little kids, we often learn words one at a time and say them one or two at a time. As we get older and go to school, we deal less with words one at a time than we do with groups of words sequenced to make a meaning. We get so used to sequencing words to say or write what we mean that we make these sequences in our minds very quickly. For example, when you saw LUNCH AT ME MEET, you probably changed this sequence very quickly to MEET ME AT LUNCH because that is the arrangement that makes sense of the four words. What else could the four words mean? Right? The question of the proper sequencing of the four words may have struck you as being so easy that it was no question at all. That's because you are good at sequencing words. It makes sense to sequence words. Sequencing words is the way we create the meanings we want to communicate.

This message sentence is short enough for us to see the proper sequence of the words very rapidly. A longer sentence of scrambled words would require more time to set the words in a sequence in which all the words relate to one another clearly. The point, though, is not how easy it is to sequence a few words or how hard it is to sequence many words, but instead that there is an overall meaning for words that comes from their sequencing. LUNCH, AT, ME, and MEET gain an overall meaning once we sequence them MEET ME AT LUNCH.

Sequencing is basic to language. It is another fundamental way to make meaning, and therefore, another convention of language. In grammar the word for sequencing is "syntax." Syntax is the orderly relationship of words that makes them make sense.

Our list of conventions now looks like this:

Convention	**Use of the convention in English**
1. Basic series of elements	1. The alphabet
2. Spacing	2. Space between words
3. Direction	3. Left to right, top to bottom
4. Sequencing	4. Syntax

By the age you start to study the sequencing of words in a sentence, sequencing is so natural to you as a convention of language that you are rarely if ever asked in school to sequence a series of words to make a clear, overall meaning. Instead, you are asked to learn the way the words function to *make* this clear relationship. You learn how sentences are built from the way words are classified. This classification appears alongside the word in a dictionary: noun, verb, pronoun, adjective, adverb, conjunction, and interjection. These classifications are called "parts of speech."

Yes, this is grammar. And perhaps now you can see why grammar can seem boring. You already know your language not only because you know the meanings of words but also because you know the conventions of language. You know, for example, that overall meaning for a group of words is created by sequencing the words. You know this even if you have never heard the idea expressed, because you know it through experience. So when you meet grammar in school, you can't help but wonder what the point is of all of these strange terms.

But knowing grammar does help to make meaning clear. It helps with sequencing by supplying a way to explain how the sequencing works. With a short sentence, such as the one we have been working with, there is little need for a way to explain why the words are sequenced as they are. But, as you know, a longer sentence can become confusing. If you are writing a longer sentence and can't be sure whether or not you are conveying the meaning you want, a knowledge of grammar comes in handy. This knowledge allows you to check out the various relationships of the words of the sentence. You might find that rearranging the sequencing conveys your meaning more directly.

Grammar helps by first supplying a part of speech of a word. Grammar helps even more in checking the *usage* of the word in the sentence. Let's take the four words of the message. "Me" is a pronoun; "meet" is (usually) a verb; "at" is a preposition; and "lunch" is (usually) a noun.

For example, the word "at" (a preposition) introduces a prepositional phrase. That is what a preposition does. A prepositional phrase requires, in addition to a preposition, a noun or pronoun as the object of the preposition. This fancy statement simply means that only two of the remaining words can directly follow "at."

EXERCISE 4.2

Which two of the remaining three words ("meet," "me," and "lunch") can directly follow "at"? •

My response to Exercise 4.2

"Me" and "lunch" can directly follow "at."

Grammar doesn't tell us *which* of the two words, though. *That* we figure out by checking the possibilities of meaning. But grammar does tell us something else about the sequencing of these four words. A basic idea of sequencing is that words that go together are *placed* together. Grammar supports this sensible idea. We already know, for example, that grammar says that the word "at" must be followed by either "me" or "lunch." Does grammar tell us anything about the sequencing of the other words?

The most general way that grammar expresses how we sequence words to make sense is like this: a simple sentence has two parts, the subject and the predicate; the words that make up the subject usually come first, the words that make up the predicate come next.

There is not much to the subject of MEET ME AT LUNCH. We know that the sentence means "You are to meet me at lunch." The subject is "you (understood)." This means that it is understood that the subject of the sentence is the "you" being addressed. When we state this meaning as a command, we leave out the "you" and simply say, " Meet me at lunch."

EXERCISE 4.3

Do any of the four words go with the "you" (understood) subject, or do they all belong to the predicate of the sentence? •

My response to Exercise 4.3

All the four words belong to the predicate of the sentence.

If all the words belong to the predicate, what determines the sequence of words in a predicate? Usually the verb comes first. That is "meet." If "meet" comes first, which comes next—"me" or the phrase "at lunch"? "Me" comes next. The pronoun "me" is the object of the verb "meet." The object of the verb comes next after the verb. That is the way we sequence verb and object in a sentence. Any phrase comes afterwards.

Why make up such rules? Because the rules help us to understand *how* the words function in the sentence, so that when we write or say complicated sentences that we've never written or said before, we have a way of checking to see if they are arranged well.

The part of grammar that is most important for figuring out the sensible sequencing of a group of words is not the part of speech of a word but the *usage* of a word. Knowing the part of speech may be the first way to identify a word, but it is general. Usage, on the other hand, is exact. Usage is what you want to figure out about a word. For example, in the sentence "I will take you to the movies," both "I" and "you" are the same part of speech, pronoun. But their usage is different. "I" is the subject of the sentence, so it comes at the beginning of the sentence. "You" is the object of the verb "take," so it comes in the predicate after the verb. The usage of "I" and "you" determines its location in the series of words.

This connection between the usage of a word and the location of the word in a sentence is the way a sentence *usually* works. First the subject, then the predicate.

But this pattern may vary. For example, take the sentence "The door slammed suddenly." It is just as short as "Meet me at lunch," and, like it, no matter how scrambled the words are, you would be able to sequence them in a meaningful way pretty quickly. But that doesn't mean that the only sequence of the four words is "The door slammed suddenly."

EXERCISE 4.4
Is there any other way to sequence the four words "the door slammed suddenly"? •

My response to Exercise 4.4
Yes, the four words may also be sequenced like this:

> The door suddenly slammed.
> Suddenly the door slammed.

Can this be true? May the word "suddenly" be moved around to two other locations in the sentence? Doesn't the usage of the word determine its location in a sentence? Yes, but only in general. The pattern is only that, a pattern. So it is flexible, not ironclad.

But "suddenly" is an adverb — right? — that modifies (changes the tone of) the verb "slammed." So it is in the predicate of the sentence. "In the predicate" could mean after the verb or before the verb. Therefore, "The door suddenly slammed" is all right. But putting "suddenly" at the beginning of the sentence — how does that make sense?

EXERCISE 4.5
How is it that "suddenly" may be placed at the beginning of the sentence? •

My response to Exercise 4.5
You may place "suddenly" at the beginning of the sentence if you want to.

That may sound like a pretty flimsy answer, but it is true.

EXERCISE 4.6
Can you think of any reason why you might want to place "suddenly" at the beginning of the sentence? •

My response to Exercise 4.6
Placing the word "suddenly" at the beginning of the sentence makes the sentence more dramatic.

Yes, placing "suddenly" at the beginning gives the sentence more tension. The placement also makes "suddenly" the most noticeable word in the sentence. This may be precisely what the person who wrote the sentence wants.

EXERCISE 4.7
Try moving the adverb in the following sentences to the front of each sentence, and then decide for yourself if that word both gains greater emphasis and adds more tension to the meaning of the sentence.

He slipped slowly into the quicksand.
She angrily stormed into the room.
The fire swept rapidly up the wall. •

Whatever your decision with each sentence, it is good to know for your own writing that you have some choice as to where you locate your words. If there is a word you want to give emphasis to, you may put it at the beginning of the sentence. If that doesn't work, you may arrange the sequence of the words some other way to focus attention on the word you want to be most noticed. You have this flexibility.

Not every word can go anywhere, however. Even the word "suddenly," which, as you have seen, may go in three different places in the sentence, cannot go in a fourth location: you can't write (except in creative writing) "The suddenly door slammed." Why not? Because it doesn't make sense. Why doesn't it make sense? Because placing the word between "the" and "door" makes the word "suddenly" appear to modify "door." It is right next to "door" and preceded by "the" just as we might write "the big door" or "the blue door." But we know that "suddenly" modifies "slammed." So, to place it between "the" and "door" is just confusing.

This example of where "suddenly" won't go illustrates the only rule about moving a word around in a sentence. Can you guess what this rule is?

EXERCISE 4.8
Can you guess what the only rule is about moving a word around in a sentence? •

My response to Exercise 4.8
The only rule is that you may move a word around in a sentence as long as the placement of the word does not confuse the word's usage, because each word's usage must be clear to make the sentence clear.

Let's take a last look at lunch. There is one question about MEET ME AT LUNCH that we have not dealt with. That is, why can't we sequence the words this way: AT LUNCH MEET ME?

EXERCISE 4.9
Is it possible to sequence the sentence AT LUNCH MEET ME? •

My response to Exercise 4.9
It is perfectly all right to sequence the sentence AT LUNCH MEET ME.

Then why don't we? We don't because we don't. I am not trying to sound clever. We don't sequence the words this way because we don't have any reason to. Our language is a curious combination of rules and flexibility. Sometimes it all boils down to plain old common sense.

CHAPTER 5

Signaling Devices

Did that last chapter on sequencing become pretty complicated? Have we gone as far as we can in identifying conventions of language? No, there is one more convention. Look at these:

MEET ME AT LUNCH
MEET ME AT LUNCH.

EXERCISE 5.1
What is the difference between these two sentences? •

My response to Exercise 5.1
There is no difference in the words. The difference is that the second sentence has a period at the end of it.

The addition of a period does not seem like much here because it certainly doesn't help us further to understand the statement. But what about the following sentence?

SHE IS PRETTY TALL AND SHY

EXERCISE 5.2
Can you say for sure what this sentence means? •

Here is another:

I LOVE PIZZA CHARLIE

EXERCISE 5.3
Can you say for sure what this sentence means? •

These two sentences illustrate how we can use little marks to make our meaning exact. The little marks we call "punctuation." They are small, apparently of minor significance, but if neither of these sentences has yet been punctuated, then we can't be sure of their meanings. Both sentences have two possible meanings, and the difference in each case is large.

EXERCISE 5.4
Can you figure out the two possible meanings of the first sentence? •

It can be punctuated in two ways:

> SHE IS PRETTY TALL AND SHY.
> SHE IS PRETTY, TALL AND SHY.

(Actually, it can be punctuated a third way:

> SHE IS PRETTY, TALL, AND SHY.

This third way is only a variation of the second in that it doesn't change the meaning from the second version. The period isn't the issue, obviously. The comma after PRETTY is the issue.)

EXERCISE 5.5
What is the difference in meaning between the first and second versions of the sentence? •

My response to Exercise 5.5
The difference is in the word "pretty." The first version of the sentence means that she is fairly tall and shy. The meaning of the second version is that she is three things: pretty and tall and shy. The big difference is, obviously, that the second version says that she is attractive, whereas the first version makes no mention of whether or not she is attractive.
Say the sentences out loud each way. Notice the pause. That's the comma. How about the second sentence?

EXERCISE 5.6
What does I LOVE PIZZA CHARLIE mean if the only punctuation is a period at the end of the sentence? •

My response to Exercise 5.6
I LOVE PIZZA CHARLIE with a period at the end means that the speaker loves a fellow called Pizza Charlie.

A statement of love is important. It is important to the speaker and it may be important to Pizza Charlie. But what if the speaker had an altogether different meaning in mind?

EXERCISE 5.7
What is the other possible meaning of this sentence? •

EXERCISE 5.8
How do you "mark" the sentence to convey this meaning clearly? •

My responses to Exercises 5.7 and 5.8
You place a comma after PIZZA to make sure that the reader doesn't think you might mean some sort of nickname PIZZA CHARLIE but, instead, that PIZZA is what the speaker loves and CHARLIE is the person being told.

I LOVE PIZZA, CHARLIE

A comma is used to set off a word in what is called "direct address"—when someone is talked to and his name is used in the sentence. That is the punctuation rule that applies to this sentence. Here are two other examples of the comma in direct address.

CHARLIE, I LOVE PIZZA.
HEY, CHARLIE, I LOVE PIZZA.

Do you remember back in EXERCISE 5.3 when I asked you if you could say what the sentence I LOVE PIZZA CHARLIE means without saying that it means either this or that? At that time you might have been one step ahead of me and thought to yourself, "If this sentence were written not just in capital letters but in both capital letters and small letters, I could then say for sure what the sentence means." If you thought of this, you are very smart—and if you didn't think of it but can figure it out now, you are no slouch of a thinker. Let's look at the sentence in small letters (or what is called "lower case"):

i love pizza charlie

EXERCISE 5.9
Can you see what is wrong with the sentence? •

My response to Exercise 5.9
The "i" should be capitalized because that is the way we write it, and besides it begins the sentence. And "charlie" should begin with a capital C because the word is a name.

All right. So we have

I love pizza Charlie.

EXERCISE 5.10

If that is all the capitalizing that the sentence needs in order to be written correctly, what does the sentence mean? •

My response to Exercise 5.10

The sentence means that the speaker is telling Charlie that he or she loves pizza.

EXERCISE 5.11

How do we know that the speaker is telling Charlie that he or she loves pizza and is not saying that he or she loves a fellow called "Pizza Charlie"? •

My response to Exercise 5.11

We know that the "Charlie" is just "Charlie" and not "Pizza Charlie" because the *p* of "pizza" is not capitalized. If the speaker had meant "Pizza Charlie" as a nickname, then the *p* would have been capitalized.

Perhaps you noticed that I caught myself in a trap by asking the question in EXERCISE 5.11. I *had* to capitalize "pizza" at the end in order to write the question correctly if it was meant as part of Charlie's name.

Now look at these two sentences:

I like the jazz.
I like The Jazz.

EXERCISE 5.12

What is the difference in meaning between these two sentences? •

My response to Exercise 5.12

The first sentence means that the speaker likes "the jazz," as in jazz music. The second sentence means that the speaker likes a group called "The Jazz."

Let's see what we have figured out here. We have seen that punctuation and capitalization are other ways we can use to indicate our meaning clearly when we write. By using punctuation and capitalization we signal to our reader how to read what we have written. "How to read" means the same as "how to understand." I call punctuation and capitalization "signaling devices." Our fifth and last convention is *signaling devices.*

Here—at last!—is our *complete* list of the conventions of language.

Convention	**Use of the convention in English**
1. Basic series of elements	1. The alphabet
2. Spacing	2. Space between words
3. Direction	3. Left to right, top to bottom
4. Sequencing	4. Syntax
5. Signaling devices	5. Punctuation and capitalization

The rules for capitalization are much simpler than the rules for punctuation. You know this all too well, right? The reason is obvious, isn't it? With capitalization there are only two choices: either you capitalize or you don't. On the other hand, there are so many different ways to punctuate. The period, the question mark, the exclamation mark, the comma, etc. The comma has enough different usages to give you a headache if you try to get them into your head all at once. Then there are quotation marks, parentheses, underlining, the ellipsis, the virgule, the apostrophe, the colon, the semicolon, the hyphen, and the dash. There are even two kinds of quotation marks, single and double. And there are two kinds of parentheses, but they don't say that. They just tell you that there are "brackets." I like brackets. I don't use them, but I like them. I don't have them on my typewriter, though.

Speaking of a typewriter, have you ever looked closely at one to see how many "marks" there are. Besides the letters and the numbers (0 through 9) and a way to make capital letters, there are 22 marks, and I have only a regular Smith-Corona electric typewriter. All I need is four more marks and I would have enough to make up an alphabet for writing cipher messages.

! @ # $ % ¢ & * ( ) _ - + = " ' : ; ? / . ,

That is 22 marks. How many of these do you know? How many of these are punctuation marks? Do you think these marks might be good for inventing a cipher for sending a secret message?

EXERCISE 5.13

You have probably already seen some of these marks used in comic strips. What, exactly, do you think the guy in figure 2 is saying? •

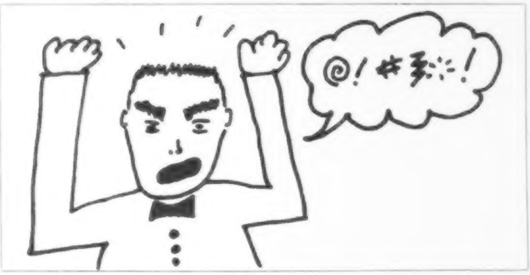


Figure 2

To some degree these are international symbols. You could print this square in France or Argentina or Israel and the readers would be able to make their own translations, just as you have. Modern poets have also used punctuation and typographical symbols in new ways. In Ron Loewinsohn's poem, the semicolon takes on a new life:

SEMICOLON; for Philip Whalen

Semicolon ; like the head & forearm of a man swim-
ming, the arm in foreshortened perspective, his head looking
away ; his mouth's open in exaggerated O inhaling on
the other side, his wrist's bent just about to re-enter the surf
; water dripping from the fingertips ; semicolon

Or a whole row of them

; ;

swimming off to Catalina

Normally in reading aloud, we don't pronounce the semicolon; we just pause. (Read that sentence aloud and you'll see what I mean.) But what about in Loewinsohn's poem?

EXERCISE 5.14

How would you read aloud the semicolons in Ron Loewinsohn's poem? •

My response to Exercise 5.14

Hmm. If I were reading before an audience, I think I'd try to "act out" the semicolon, maybe by pointing to my head (on the "semi") and then crooking my arm (on the "colon"). Then when I got to the row of them I might make an abbreviated swimming motion.

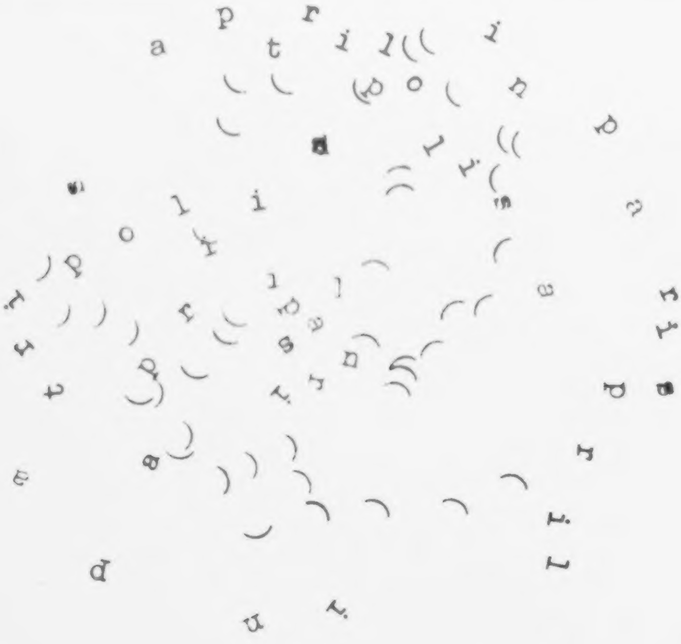
If I were reading onto a tape, say, with no audience, then acting it out wouldn't help. I'd have to do it all with my voice. I might get brave and read the row of semicolons as "splash splash splash splash splash" and so on. The more I think about it, the more I see that this poem was written for the eye, not the ear.

Maybe there is such a thing as "eye poetry," poetry that only the eye can fully enjoy. What do you think? Do you think that "eye poetry" is limited because it appeals basically to one sense? What about "ear poetry?" This would be poetry that appeals only to the ear. A poem is sounds and rhythms. Perhaps you have heard someone say, "I like the sound of the poem; I don't care what it says." Maybe poetry is music first and meaning second. What do you think? The eye? The ear?

EXERCISE 5.15

Do you have any thoughts about "eye poetry" and "ear poetry?" •

In Belgian poet Paul de Vree's poem about April in Paris, the parentheses flutter around like birds:



EXERCISE 5.16
How would you read Paul de Vree's poem aloud? •

My response to Exercise 5.16
I think I'd get some people to read it with me, in chorus, with everyone saying "April in Paris" at random times and in fluttery voices, to make it light and airy and jumbled, the way it is on the page. I'd hope the flutteriness would give a feeling similar to that of the parentheses in the poem.

If these questions seem hard, try this one: Who invented the question mark? I've asked this question of many writers and teachers. Not a single one knew the answer. Ask your teacher, and watch the stunned expression.

The question could be rephrased and made larger: What is the history of punctuation? It turns out that our system of punctuation has been in effect for only around 400 years. In ancient times the words tended to be all run together with no punctuation, though there were paragraph divisions. Occasionally there was *some* punctuation: in a 3rd-century B.C. text, for instance, the double point (:) served as a period. The single point, placed high on the line, also indicated a period. The same point, placed in the middle of the line, indicated a comma. "Our" comma appeared around the 9th century. But it wasn't until the end of the 15th and beginning of the 16th centuries that our system of word separation and punctuation was standardized (by the great Italian printers of that time). It's odd, isn't it, to think of something so small and ordinary as a comma being invented? It's odd to think how punctuation has changed in the past, and how we never imagine it changing in the future.

EXERCISE 5.17
If you were asked to design new punctuation marks, what would you make them look like? Make up a new period, comma, semicolon, colon, exclamation point, question mark, and parentheses. •

My response to Exercise 5.17

. =
, =
; =
: =
! =
? =
( ) =

Now write or copy a paragraph or two, using your new system of punctuation marks, and see how it looks.

CHAPTER 6

The Bridge to Deciphering

You now have the five conventions of language. You can take on the challenge of deciphering. You will be better off, though, if you look at some examples, not just for the practice but also to see if there is a principle involved, a principle that will help in deciphering.

Your task in deciphering is to figure out the meaning of a passage. You may decipher a good part of it but be temporarily stumped by the one remaining part. How, then, will you go about trying to decipher the one remaining part? Will you take it out of the passage and look at it separately? Perhaps. But more likely you will think about what it might mean *in relation to* the meaning you have already established. For example, for a missing word in a sentence, you will think about what the word could mean in the sentence, right?

Let's say you're reading a book about baseball. But a dog took a bite out of a page, so that one word is missing from it. It says, "The mighty slugger slammed the ball over the fence, a home____." That's easy, right? But it's easy only because you know the *context* here is baseball.

Now let's take away the context entirely. Imagine that you find a piece of paper with only "a home______" on it: you wouldn't know how to finish it. There are too many possibilities. A home owner? A homemade pie? A home economics teacher? A home entertainment center? A homeland? You see how important the context is. The context gives us a better idea of what the words mean.

Perhaps you have heard the phrase "out of context." For example, a person who has been quoted may complain that his or her meaning did not come across clearly because the quoted sentence had been lifted "out of context." What does this complaint mean? It means that the sentence by itself does not mean what it may appear to mean. Instead, so the complaint goes, its meaning is clear only *in context*, in relation to the rest of the passage or statement.

Again let's try out the principle that the way you understand meaning is by understanding the context. Here is your example, a bit harder than the baseball example: you are trying to decipher a statement in which you have figured out all but the last two words, and you know that the next-to-last word is some form of the verb "stammer" or "stutter":

The girl is so beautiful that she reduces the boy to a ________ ________.

What then can you tell *from the context* (from the location of the missing words in the sentence)? You know that the next-to-last word is some form of the verb "stammer" or "stutter." That it might be some other form makes sense *in context* because the next-to-last word isn't going to be a verb. It couldn't be, with "to a" coming before it. Instead, the next-to-last word has to modify the last word, which in grammatical terms is called the object of the preposition and has to be a noun or a pronoun. The four words together, "to a ________ ________" form a prepositional phrase. In short, the next-to-last word is probably either "stammering" or "stuttering." So we have

The girl is so beautiful that she reduces the boy to a stuttering ________.

The last word is likely to be "fool" or something like that. You can check out this possibility against what comes before or after this sentence. If your deciphering of these two words still makes sense, then you can be sure that you are on the right track.

For me to explain this line of reasoning, I used terms from grammar. That doesn't mean, though, that you had to know the grammatical terms to follow the reasoning. As a matter of fact, you don't even need the reasoning to come up with the same answer for the words. You might have just guessed them. The context makes good guessing possible. The context suggests what the last two words are. To put this another way, you can figure out the two words "in context," and not by means of grammatical analysis.

There is an advantage to knowing grammar, though: you have a way to explain step by step what *kind* of words are likely to be the missing words. By "kind" I mean that the next-to-last word is not likely to be a regular form of the verb but, instead, a form with "ing," which makes the word into an adjective modifying the last word.

Working in context takes a lot more than a good capacity to analyze the possible forms of words or, what in grammar is called their part of speech and usage. More important than a knowledge of grammar is a feel for the language. This sensitivity to language helps you to comprehend what the intended meaning of the passage is. For example, let's say that you have worked out the sentence we have been discussing to mean:

> The girl is so beautiful that she reduces the boy to a stuttering fool.

And then someone challenges you by claiming that your deciphering of the sentence is ridiculous because no one could, just by her beauty, change someone into a "stuttering fool."

EXERCISE 6.1

How would you reply to this criticism of your deciphering? •

My response to Exercise 6.1

I would say that the criticism is foolish because the criticism is based on a misunderstanding of the sentence.

Would you say something like this? Do you agree with the criticism? Do you agree with my defense against the criticism?

The problem with the criticism is that it takes the phrase "stuttering fool" literally. What is wrong with this approach? Everything. The sentence doesn't mean that the boy was literally changed into a "stuttering fool." And certainly not permanently, whatever the change. The point of the sentence is how the girl's beauty affected the boy's behavior. "Stuttering fool" is an exaggeration in order to emphasize the point. The phrase gives the sentence its punch. In fact, you *expect* the phrase or something like it to follow the verb "reduced." This expectation is an example of sensitivity to language. Given the context of the sentence, the last two words are likely to be as strong as possible. "Stuttering fool" is a much more expected and appropriate ending to the sentence than, say, "a state of nervous confusion." Look how flat it would be with those words:

> The girl is so beautiful that she reduces the boy to a state of nervous confusion.

Clear? Yes. But graphic? No.

The principle of context applies not only to picking the appropriate phrase for a sentence, as we just did, but also in working with the multiple meanings a word can have. For example, say you have figured out a sentence this far:

> She is a _________ _________.

And you think the fourth word might be "good." You don't have to decide now, nor does it make much sense to, until you decipher what the next word might be. If you have no hint for the next word, you would do well to go on to the next sentence to see if figuring out this sentence might shed some light on the two missing words in the previous sentence. Let's say that the next sentence is about all the swimming races she has won. Then the last word of the previous sentence might be "swimmer." Or, say the next sentence is about how trustworthy and helpful she is. Then the last word of the previous sentence may be "friend."

"Swimmer" and "friend" are very different. Could, then, "good" be the next-to-last word in either case? If it could, would its meaning be the same in both sentences?

EXERCISE 6.2

Would "good" have the same meaning in "good swimmer" and "good friend"? •

My response to Exercise 6.2

No, "good" would not have the same meaning in the two sentences. In the first sentence it would mean "capable." In the second it would mean "loyal."

The meaning of "good" changes from one sentence to the next. The meaning of "good" in each case is clear, nevertheless, by the context. Once we know that the last word is "swimmer," we know that "good" means "capable." Once we know that the last word is "friend," we know that "good" means "loyal."

How does this help your deciphering? You may decipher a word and be puzzled by it because you are thinking of only one of its meanings. Don't worry. Wait until you decipher the *other* words in the passage—then see if the word makes sense with another meaning.

This is pretty easy, isn't it? I'm glad, because explaining the different meanings a word can have is difficult sometimes. For example, how would you like to try to differentiate the meaning of "good" in the following three expressions, assuming there is a difference?

good luck
good going
good night

Knowing the subtle changes in meaning a word may have, depending on its context, helps you in deciphering precisely the right word, even if that word is a very little and apparently not very important one.

EXERCISE 6.3

Can you fill in each blank with a different word that, nevertheless, makes good sense?

good _________ baseball
good _________ toast
good _________ little kids
good _________ a sandwich
good _________ nothing

My response to Exercise 6.3

The first is "at." The second is "on." The third is "to." The fourth is "on." The fifth is "for."

There may be another series of words, each different, that answers the question. For example, the third could be "with" just as easily as "to." The second could be "with" also. And a sports announcer could be "good on baseball," which would have a different meaning, obviously, from "good at baseball."

The point, though, is that a change in the little word, no matter how unimportant it may seem, causes a change in meaning of the phrase. For example, there is a definite difference in meaning between "good on bread" and "good in bread." There is also a difference in meaning between "good to little kids" and "good with little kids," but this difference is not as easy to explain. It's more subtle. Still, the difference in meaning among the five phrases may be so distinct in your estimation that you would say that the little words actually *change* the meaning of "good" from one phrase to another. For example, "good to little kids" and "good with little kids" may be close in meaning, but that doesn't mean that the meaning of "good" is the same in both phrases. "Good to little kids" means "kind" or "nice to little kids," whereas "good with little kids" means, for example, that the person works well with little kids.

To make this point clear, here are three more phrases, each of which takes a different word, but in these cases, the little word does *not* alter the meaning of "good."

good _________ the circumstances
good _________ my standards
good _________ the highest expectations

EXERCISE 6.4

What words would you place in the blanks? •

My response to Exercise 6.4
The first is "under." The second is "by." The third is "beyond."

In these three phrases, the meaning of "good" does not change much, if at all. Basically, the meaning of "good" stays the same throughout all three. Another way to express this consistency of meaning is to say that the word that follows "good" in each case — "under," "by," and "beyond" — does not change the meaning of "good." This makes this group of three phrases different from the preceding group of five phrases involving the word "good" because there the meaning of "good" is changed by the word that follows it. To recognize this difference requires some sensitivity to language, and this sensitivity comes in very handy in deciphering.

If you read often, you become familiar with the way people phrase ideas. This familiarity comes in handy in deciphering work, too. For example, to form a phrase, the word "circumstances" often takes "under" before it, as in "under the circumstances." The phrase "under the circumstances" is no fancy, special phrase. It's pretty common. Similarly, the word "standards" often takes the word "by" before it to form a phrase, and "expectations" often takes "beyond" in front of it.

If you read a lot, you have probably run across these phrases. This familiarity allows you to think quickly of what a missing word might be in a particular context. For example:

> The weather was terrible for opening night of the play; __________ these circumstances, we started fifteen minutes late in order to allow people time to get there before the curtain went up.

The missing word here is "under." If the phrase is familiar to you, you will think of "under" pretty quickly. If it is not familiar to you, you might grope around for some time, trying to decide what word should go there.

Context is where your knowledge of the conventions of language comes in very handy. And when you are good at working in context, then you can be sure that you will be good at deciphering. Context is your bridge to deciphering.

CHAPTER 7

Deciphering Difficult English

If the conventions of language are all I have cracked them up to be, then we might as well test them against something really challenging.

Let's go back in English writing to the seventeenth century. That's 300 years ago. Any writing then is hard enough for us now, but I am picking the hardest I can find—so hard that you won't run across it in school until college. The writing is especially hard because the writer, a scholar in many languages, used his language knowledge in writing the book. He did whatever he could to elevate his subject, to make his subject sound important. The book was one of the most ambitious in all of English literature—ambitious in that he tried to write a book unlike any that had been written before. He succeeded. And no one has written one like it since.

The purpose of the book, as the author states, is to "justifie the wayes of God to men." Not only is this a big subject, some of the words are spelled oddly.

EXERCISE 7.1
Which words in the line are spelled differently from the way we spell them? •

My response to Exercise 7.1
The two words are "justifie" and "wayes," which we spell "justify" and "ways."

To warm up for this deciphering exercise, you can get a feeling for the writing by reading these opening lines of the book:

1 Of Man's First Disobedience, and the Fruit
2 Of that Forbidd'n Tree, whose mortal tast
3 Brought Death into the World, and all our woe,
4 With loss of Eden, till one greater Man
5 Restore us, and regain the blissful Seat,
6 Sing Heav'nly Muse, that on the secret top
7 Of Oreb, or of Sinai, didst inspire
8 That Shepherd, who first taught the Chosen Seed,
9 In the Beginning how the Heav'ns and Earth
10 Rose out of Chaos:

And we haven't even reached a period yet! What is this? It is strange, like nothing else written in the English language. The author intended it to be like nothing else written in the English language. Here is how it goes on:

10 Rose out of Chaos: Or if Sion Hill
11 Delight thee more, and Siloa's Brook that flowd
12 Fast by the Oracle of God; I thence
13 Invoke thy aid to my advent'rous Song,
14 That with no middle flight intends to soar
15 Above th' Aonian Mount; while it persues
16 Things unattempted yet in Prose or Rime.

In that last line, line 16, the author even says that this writing is supposed to be unique: "Things unattempted yet in Prose or Rime." "Rime" means poetry. Prose is any writing other than poetry. The author goes on to say:

17 And chiefly Thou O Spirit, that dost preferr
18 Before all Temples th'upright heart and pure,
19 Instruct me, for Thou know'st; Thou from the first
20 Wast present, and with mighty wings outspred
21 Dove-like sat'st brooding on the vast Abyss
22 And mad'st it pregnant: What in mee is dark
23 Illumin, what is low raise and support;
24 That to the highth of this great Argument
25 I may assert Eternal Providence
26 And justifie the wayes of God to men.

This part ends with the line quoted earlier in which the author states his purpose for writing the book.

This is a sample of what you are going to take on. If this isn't hard, I don't know what is. *Everything* is hard about it. The words are hard, the sentences are hard, and the subject matter is hard. Still, I am curious what — if anything — is clear to you within these first 26 lines.

EXERCISE 7.2
What, if anything, comes across in these first 26 lines? Do you have *any* idea what the author is saying? •

EXERCISE 7.3
What about the beginning? What do you think the author means by "Man's first Disobedience"? Are you helped at all by the next phrase "the Fruit of that Forbidd'n Tree"? •

Perhaps the next two lines help (lines 3 and 4). Apparently, the "tast(e)" of this "Fruit" "Brought Death into the World, and all our woe," and caused the "loss of Eden."

Is the subject clear now? The Garden of Eden. Adam and Eve. The sin of eating the apple. The Devil tempted Eve to disobey God's order; when she did, God expelled Adam and Even from the Garden of Eden, from Paradise. Now mankind had to suffer and die.

Perhaps you recognize this as the Biblical story of the Fall of Man. Thus, the title of this book, *Paradise Lost.* Perhaps you also recognized "That Shepherd, who first taught the chosen Seed" (line 8) as Christ. It seems that the author intends to retell the story of the Bible. But the author claims no special knowledge. Instead, he asks God to help him in his writing.

EXERCISE 7.4
Do you see a place where the author asks God to assist him? •

My response to Exercise 7.4
One place is line 17, "And chiefly Thou O Spirit, that dost preferr/ Before all Temples th'upright heart and pure,/ Instruct me." The author asks God to "instruct" him so that he can "justifie the wayes of God to men" (line 26).

Declaring one's subject right at the beginning and asking God for assistance was the custom for beginning an important book. The Greek writer Homer did this; Homer wrote *The Odyssey* and *The Iliad.* These books are called "epics." The author of *Paradise Lost* intended to write an epic. He invoked (asked for) God's help in telling the story of the Fall of Man.

27 Say first, for Heav'n hides nothing from thy view
28 Nor the deep Tract of Hell, say first what cause
29 Moved our Grand Parents in that happy State,

30 Favourd of Heav'n so highly, to fall off
31 From their Creator, and transgress his Will
32 For one restraint, Lords of the World besides?

I have shown you the first 32 lines of *Paradise Lost* to give you a feeling for what you are going to try to decipher. The language is special, but it is still English. Before trying to decipher a group of lines, let's see first how closely the author sticks to the conventions of English.

1. The alphabet we know;
2. The words are spaced apart;
3. The lines read from left to right and top to bottom;
4. The words are sequenced to create an overall meaning;
5. Punctuation and capitalization are present.

But the author's language is *not* the English language as we know it.

EXERCISE 7.5
What to you is the biggest difference? How would you describe what makes the author's language hard? •

My response to Exercise 7.5
What I think is the hardest about this writing is the sentences. Not the strange words, not the old-fashioned feeling, not the high and mighty tone, but the sentences. They are long and complicated. I get lost. What is the author trying to do? Confuse me?

EXERCISE 7.6
Does your answer to Exercise 7.5 relate in any way to the conventions of language? •

My response to Exercise 7.6
Yes, there is a connection to the conventions of language. The fourth convention, sequencing. We sequence words in order to make sense, to make a clear overall meaning. This author seems to sequence words in as complicated a way as possible. If what he is writing is so important, then why can't he get his ideas straightened out enough first to deliver them in a way we can understand? I'm willing to try—but not if he is just going to make me feel stupid.

Perhaps you are sympathetic with my complaint. The writing is hard, no doubt about it. The sentences are long and complicated. One wonders how anyone could write this way in the first place. Here is how it happened. The author—John Milton—was a scholar. He studied many languages and he especially liked the ancient languages, Greek and Latin. In fact, he *wrote* in Greek and Latin. He wrote in Italian too. When he conceived of writing *Paradise Lost*, he wanted to establish a language that would be fitting to his subject.

What's wrong with his own language? Milton did not think much of the English language of his time, the seventeenth century. His dislike was directed against his contemporary writers, in particular the poets, for their dependence on rhyme. Milton called this dependence "the modern bondage of Rimeing." He called rhyme "the Invention of a barbarous Age, to set out wretched matter and lame meeter, grac'd indeed since by the use of some famous modern Poets, carried away by Custom." Milton regarded the subject matter of the literature of his time as "wretched" because it didn't aspire to great purpose. He regarded the literature of his time as also lacking in real music because the writing was confined to "lame meeter."

"Meeter" is "meter." The word means a specific rhythmic pattern of stressed and unstressed syllables. Here is an example that I made up; the half circles above syllables indicate unstressed syllables, and the diagonal lines indicate stressed syllables. ("Stressed" means emphasized, "unstressed" means not emphasized.)

˘ / ˘ / ˘ / ˘ /
I came | to see | what you | had done

˘ / ˘ / ˘ / ˘ /
and looked | around | and ate | a bun.

Each line is composed of four units of an unstressed syllable and a stressed syllable. It is a hard way to write and hold the reader's interest. This kind of writing can become so singsongy that the reader doesn't pay much attention to what is actually being expressed. Milton felt that set rhythm (the "meeter") was "lame" and the rhyme added only "a jingling sound of like endings."

To find another way to write, Milton went back to ancient writers whose work he loved. These writers didn't rhyme and their rhythms were, to Milton's ear, not as confining. He modeled his English on their writing and called it "English Heroic Verse without Rime as that of Homer in Greek and Virgil in Latin." In a sense then, Milton invented his own English language. So he *did* have his reasons for writing in a different way.

EXERCISE 7.7

If you were going to write a very important book, would you consider inventing a new kind of English for the book? •

My response to Exercise 7.7

This is an interesting question because, on the one hand, I might feel that inventing a new kind of English is going too far. I might lose even a curious reader. The gamble is not good. On the other hand, writing is experienced first as language. To put this idea another way, the first thing you experience in reading is the language itself; you get a feeling from the language before you get a strong sense of the content. If this is true, then perhaps considering changing the language in some ways is a good idea for certain subjects. The changed language is your signal to the reader of your special purpose. The question then becomes how far to go in altering the language. When does a possibly good idea become, in practice, a bad idea? This question is one that writers think long about.

We have seen enough of Milton's language to identify some characteristics. Most noticeable, I think, is the sentence structure. Milton's sentence structure is based on Latin sentence structure, which is different from English sentence structure. Even if you haven't studied Latin, you can appreciate from Milton's writing that Latin sentence structure can sound complicated.

EXERCISE 7.8

What other feature of Milton's language do you notice as different from normal English? •

My response to Exercise 7.8

Milton capitalizes a lot of words that we do not capitalize in modern English.

In modern English, we capitalize proper nouns (such as names of people, places, and organizations), but in ancient languages, more than just proper nouns were capitalized. Milton may have drawn on ancient languages as his model for capitalizing. You may have guessed that he increased the capitalizing in order to bring emphasis to more words. Look at the capitalizing in just the first three lines:

> Of Man's First Disobedience and the Fruit
> Of that forbidd'n Tree, whose mortal Tast
> Brought Death into the World and all our woe,

Capitalizing the first letter of each line of poetry is a custom of poetry still practiced by many poets today.

Another characteristic of Milton's "invented" English, his "heroic verse," is to replace the letter *e* with an apostrophe. This characteristic may have been the one you had in mind in reply to Exercise 7.8. Here are some examples.

forbidd'n (line 2)
Heav'nly (line 6)
Heav'ns (line 9)
th' (line 15)

EXERCISE 7.9

What does this dropping of the *e* do to the word? •

My response to Exercise 7.9

Dropping the *e* reduces that syllable.

"Forbidd'n" (in line 2) no longer has three complete syllables, but two and a partial one. You might say that the word now has two and a half syllables. Milton does this so much that we can assume that he has a purpose. He is affecting the way we read the words. He is affecting the rhythm of the line. He is trying to set the rhythm of the language the way he *wants* us to read it, to feel it. This technique is used by other writers. Mark Twain, for instance, used it to represent American slang in *The Adventures of Huckleberry Finn*.

Let's summarize the characteristics we have established of Milton's "invented" (altered) English language.

1. Complicated sentence structure (difficult syntax)
2. Increased capitalization
3. Replacing the letter *e* with an apostrophe

Add the problem of old-fashioned spelling and we have ourselves quite a challenge.

Now let's try to decipher some of this. We will go from where we left off in Book I of *Paradise Lost*.

33 Who first seduc'd them to that foul revolt?
34 Th'infernal Serpent; hee it was, whose guile
35 Stirrd up with Envy and Revenge, deceiv'd
36 The Mother of Mankinde; what time his Pride
37 Had cast him out from Heav'n, with all his Host
38 Of Rebel Angels, by whose aid aspiring
39 To set himself in Glory above his Peers,
40 He trusted to have equaled the most High

41 If he oppos'd; and with ambitious aim
42 Against the Throne and Monarchy of God
43 Rais'd impious Warr in Heav'n and Battel proud
44 With vain attempt. . . .

Twelve lines and only two sentences—and one is eleven lines long! Milton sure liked his complicated sentences, but at least the first one is short.

Who first seduc'd them to that foul revolt?

We know who did it. The Devil, disguised as a snake. Thus, "Th'infernal Serpent." And "hee" (line 34) isn't a problem because the word looks like "he" and "he" makes sense in the context, right? "Hee" "deceiv'd" Eve, "The Mother of Mankinde" (line 36).

In this line (36) and the next we also learn what got the Devil thrown out of Heaven, "his Pride," and what he tried to do. He persuaded some of the angels in Heaven to join him in trying to overthrow God's rule.

EXERCISE 7.10

These other angels who joined the Devil, do you see what they are called? •

My response to Exercise 7.10

These other angels who joined the Devil are called "his Host of Rebel Angels."

Milton doesn't say directly how the Devil persuaded these other angels to join him, but we get the idea that he convinced them that he was powerful enough to challenge God's rule:

He trusted to have equald the most High

In other words, these angels were convinced that the Devil could "equal" God. Then perhaps they figured that if they joined the Devil's conspiracy, they would make the difference and conquer God and the loyal angels. But the Devil was a step ahead of the tempted angels already, for he had his eye on ruling Heaven by himself:

. . . by whose aid aspiring
To set himself in Glory above his peers

"By whose aid," by the aid of the angels willing to follow him, the Devil intended "To set himself in Glory above his Peers," his fellow angels, for the Devil was originally an angel before he was exiled by God to Hell.

EXERCISE 7.11

So, led by the Devil, what did the "Rebel Angels" do? •

My response to Exercise 7.11

They fought a war.

This is easy if you recognize "Warr" (line 43) as "war."

EXERCISE 7.12

Did the "Rebel Angels" win the "Warr"? •

My response to Exercise 7.12

No, they lost. They fought "with vain attempt."

And for their evil, God punished them. First we learn what happened to the Devil.

> 44 With vain attempt. Him the Almighty Power
> 45 Hurled headlong flaming from th'Ethereal Sky
> 46 With hideous ruin and combustion down
> 47 To bottomless perdition, there to dwell
> 48 In Adamantin Chains and penal Fire,
> 49 Who durst defie th'Omnipotent to Arms.

The sequencing of words at the beginning of this sentence is especially strange. "Him the Almighty Power/ Hurled headlong flaming. . . ." But we can understand it because it is just a slight rearrangement of the normal sequencing.

EXERCISE 7.13

What would be the normal sequencing of these seven words? •

My response to Exercise 7.13

The normal sequencing of these seven words would be

> The Almighty Power hurled him headlong flaming

The word out of order is "Him." Why do you think Milton did this? For emphasis, yes, which is the same reason that he used three words beginning with *h*. (Grouping words with the same letters or sounds is called "alliteration." It is a technique used by writers to bring emphasis to their meaning through sound.)

This long sentence is not especially hard until you get to the last line, "Who durst defie th'Omnipotent to Arms."

EXERCISE 7.14
Who is the "who" in this line? •

My response to Exercise 7.14
It has to be the Devil. He is the one who challenged God.

But why is the line way down here? Shouldn't the "who" be near the word it refers to? Isn't that the way English is supposed to work? Milton's sentence is out of whack because the "who" refers all the way back to "Him" at the very beginning of the sentence. What, then, is Milton doing? Trying to confuse us?

No, he is taking a chance. He is gambling that the "who" will still clearly refer back to "Him," the Devil. This way, Milton can give an uninterrupted description of the Devil's being "hurled" down to Hell. For dramatic effect, Milton is gambling clarity.

EXERCISE 7.15
Does this gamble work for you? •

If so, Milton's gamble works. If not, it fails.

Enough deciphering work with John Milton's *Paradise Lost.* (He wrote a second book, *Paradise Regained.*) But if you are curious about where the Devil and his crew landed, here is Milton's description of Hell, the first sentence of which is, I warn you, 35 lines long!

> Nine times the Space that measures Day and Night
> To mortal men, hee with his horrid crew
> Lay vanquisht, rowling in the fiery Gulfe
> Confounded though immortal: But his doom
> Reserv'd him to more wrauth; for now the thought
> Both of lost happiness and lasting pain
> Torments him; round he throws his baleful eyes
> That witness'd huge affliction and dismay
> Mixt with obdurat pride and stedfast hate:
> At once as far as Angels kenn he views
> The dismal Situation waste and wilde:
> A dungeon horrible, on all sides round
> As one great Furnace flam'd; yet from those flames
> No light, but rather darkness visible
> Serv'd only to discover sights of woe,
> Regions of sorrow, doleful shades, where peace

and rest can never dwell, hope never comes
That comes to all; but torture without end
Still urges, and fiery Deluge, fed
With ever-burning Sulfur unconsum'd:
Such place Eternal Justice had prepar'd
For those rebellious, here their Pris'n ordained
In utter darkness, and their portion set
As far remov'd from God and light of Heav'n
As from the Center thrice to th'utmost Pole.
O how unlike the place from whence they fell!

How much of this could you read? Could you read it more easily than the previous parts? As long as that first sentence is, the structure is not as complicated as the structure of previous sentences you have taken on. The simpler structure makes for simpler syntax: you can relate the words to one another more easily. The problem in this section, if there is one, is some of the words. The spelling of a number of words, which is not Milton's doing but is instead the spelling of seventeenth-century English, is just far enough away from our spelling to be confusing.

EXERCISE 7.16

How strange do you finally think Milton's language is? Too strange? Pretty strange? A good kind of strange for what he was trying to do? Does it get less and less strange the more you look at it? •

Milton's language is unique in English literature. The only writing it remotely sounds like is the writing of the Bible. Given Milton's purpose, this resemblance makes sense.

Paradise Lost isn't a book I would pick up for relaxed, easy reading, but I'll tell you one thing: I will never forget Milton's description of Hell.

EXERCISE 7.17

Have you ever thought or dreamed about Hell, about what it might be like? How would you describe it? (It can be any hell: a traditional hell or a hell you totally make up; for instance, a hell in which evil cooks are trapped inside giant toaster ovens.)

Here are some suggestions for how to write such a Miltonic description:

1. Really let your imagination go. Close your eyes and imagine some really *horrible* place. Write down your description in prose.
2. Go back and capitalize some of the nouns, and use a thesaurus to change some simple words to more thunderous ones (for example, change "nose" to "proboscis").

3. Now connect all or many of your sentences, using connecting words such as "and," "but," "thus," "because," "of whom," "although," "despite," and so on. You'll probably be creating the run-on sentences that teachers dislike in essays, but what you're writing isn't an essay.

4. If it doesn't sound enough like Milton, take some phrases and sentence parts and move them to another spot in the piece, but not so far away that the reader won't have any idea what they mean.

5. If you and other classmates are doing this, you might put all the descriptions together, to form a description of a superhell. (If you don't like the subject matter, change it to a description of any kind of heaven. Be forewarned, though, that through the ages writers seem to have found it easier to describe a hell than a heaven.) •

CHAPTER 8

Using Deciphering Techniques to Crack Another Language: Part I

I'm going to give you a passage in an old language, one you have probably never seen before. At first it may look like a code or a cipher, but it is really a language, and you're going to "crack" it. I'll help by giving you the meanings of some of the words.

Remember what you have learned from your deciphering work in the previous chapter. Remember too what you have learned about working in context. Use your logic and your imagination. Don't be afraid to guess. Treat it as a guessing game. I think you may be surprised by what you can do.

Here are four lines in the language:

1 Whan that Aprill with its shoures soote
2 The droghte of March hath perced to the roote
3 And bathed every veyne in swich licour,
4 Of which vertu engendred is the flour;

Let's see what we can discover about this by applying what we know about the conventions of language. How about the first convention? Do you recognize a familiar series of basic elements, and are these elements pictorial or alphabetical? Alphabetical, right? Secondly, what about spacing? Are groups of basic elements set off from one another by spacing? If so, then we have words as we know them. Next is direction. In which direction does it seem that we are to read the four lines? If we can figure out the direction, then we can go after the meaning of the words. Only then can we figure out if the words have been set in a particular sequence in order to create an overall meaning as we do in English. And the fifth and last convention, signaling devices. Is there any use of capitalization and punctuation or anything that resembles these devices?

EXERCISE 8.1
List the five conventions to the left, and to the right list the way the conventions appear to be used in this language. •

My response to Exercise 8.1

Convention	**Usage**
1. Basic series of elements	1. The alphabet
2. Spacing	2. Space between words
3. Direction	3. Left to right, then top to bottom
4. Sequencing	4. ?
5. Signaling devices	5. Capitalization, punctuation

The language resembles English, doesn't it? Let's see if the resemblance to English goes beyond the conventions.

EXERCISE 8.2
Do you recognize any of the words? •

My response to Exercise 8.2
Yes, I recognize about half of them, maybe more, and some of the others look like English words, but they are spelled differently.

All right, let's make a list of the words we recognize.

Line 1	that, Aprill, with, its
Line 2	The, of, March, to, the
Line 3	And, bathed, every, in
Line 4	of, which, is, the

How does this list compare to the list of words you recognize? I'm going to take the four lines and italicize all the words in the list above.

> When *that Aprill with its* shoures soote
> *The* droghte *of March* hath perced *to the* roote
> *And bathed every* veyne *in* swich licour
> *Of which* vertu engendred *is the* flour.

Are there other words here you think you might know? Are there words that look like English words enough to guess at them? Not everyone is going to pick the same, but I bet we agree on some of them.

EXERCISE 8.3
Which words in these four lines resemble words in English? •

My response to Exercise 8.3
Here are my picks:

Line 1	"Whan"	resembles	"when"
	"shoures"	resembles	"showers"
Line 2	"droghte"	resembles	"drought"
	"hath"	resembles	"has"
	"perced"	resembles	"pierced"
Line 3	"veyne"	resembles	"vein"
	"licour"	resembles	"liquor"
Line 4	"flour"	resembles	"flour" and "flower"

EXERCISE 8.4
Did I pick any words you didn't? Did you pick any words that I didn't? •

The words that I picked seem to make sense in context. So I am going to go with them as a reasonable guess at this point. You pick the ones you think are reasonable guesses. Then insert them in the lines and read the lines over to yourself. See if any other words, words that I haven't mentioned, suggest a meaning.

As I read over the lines, other words come to mind. I am not as sure of these, but here they are, my second group:

Line 1	"soote"	resembles	"soot"
Line 3	"swich"	resembles	"switch"
Line 4	"vertu"	resembles	"virtue"
	"engendred"	resembles	"engendered"

That last one, "engendered," may not be one you go along with, it may not be a common word to you, but "engender" is an English word. It means "to give," as in "The writer engendered his hero with great strength."

EXERCISE 8.5
Did you pick any of my second group of words in your list? •

EXERCISE 8.6
What do you think of the words in my total list, namely the two bunches of the words that I think resemble English words? •

The best way to try out the words on your list and the words on my list is to test them *in context.* That means, as you know, to try out the words in the actual passage and see if they make sense. In using this method we are assuming that the writing was intended to make sense. Therefore, if we substitute a word and it does not make sense, we can figure, at least for the time being, that our word is wrong.

First, let's see how many of the words in the four lines are already covered. Here they are, either italicized (as words we know) or in bold type (for words that resemble words in English):

> **Whan** *that Aprill with its* **shoures soote**
> *The droghte of March* **hath perced** *to the* **roote**
> *And bathed every veyne in* **swich licour**
> *Of which* **vertu engendred** *is the* **flour;**

Working off of my list, every one of the words is either a word we know in English or a word that resembles a word in English. So let's see if we can figure out what these lines are saying.

EXERCISE 8.7
What do we know that line one is about and what more can we guess? •

My response to Exercise 8.7
We know that line one is about "April" and it looks as if it's about "April showers."

EXERCISE 8.8
What do you make of the whole line? Can you decipher it? •

My response to Exercise 8.8
Line one reads: "When that April with its showers soot."

EXERCISE 8.9
Does that deciphering (translation, interpretation) make sense? •

My response to Exercise 8.9
Not really. Some of it makes sense. It appears that you don't need the "that," but "soot" doesn't make any sense, unless "shoures soot" means "showers of soot." Although that makes sense grammatically, it does not make sense in context because there is no mention of fire or smoke or factories. On the contrary, the line seems to be about the coming of spring.

So the problem of the meaning of "soot" has to wait. It can't be solved in the context of the line because the suggested meaning, through the resemblance of "soote" to our word "soot," doesn't work in the context. Yet the meaning might be revealed by our working on the other lines. So let's go on to line 2:

> The droghte of March hath perced to the roote.

If "hath" is "has," and "perced" is "pierced," and "roote" is "root," then we have

> The drought of March has pierced to the root

So the first two lines look like this

> When April with its showers ____?_____
> The drought of March has pierced to the root

What we have here is a literal deciphering or translation. That means a word-by-word replacing (with "that" left out of line 1). A literal deciphering is a big step forward, but it is not the whole matter. The question remains as to whether or not the literal deciphering makes sense.

EXERCISE 8.10
Does the literal deciphering of the first two lines make sense? •

My response to Exercise 8.10
The lines sound as if they make sense, but something is wrong. They don't really make sense.

Perhaps the answer lies with the meaning of "soote." So let's have the meaning. "Soote" is an old word meaning "sweet." Say "oo" out loud. Notice that your lips are almost saying "w." So the phrase is "with its showers sweet," and since our normal sequencing of words places the adjective before the noun it modifies, we would say "with its sweet showers."

Does that help? Well, sure, it helps, but it doesn't solve the problem of the *overall* meaning of the two lines. The problem is one of syntax. That means the same as saying the problem is one of the relationships of the words. Specifically, the problem is what is doing the piercing. Is it "April with its sweet showers" or "the drought of March?"

EXERCISE 8.11
What does common sense tell you is the answer to the question of what is doing the piercing? •

My response to Exercise 8.11

"The drought of March" doesn't pierce something "to the root" unless it means to deplete the water supply to the extent that the root can't reach any water. That makes sense within itself, but the other way makes better sense for these two lines. That is, the "April showers" pierce "the drought of March" "to the root" by dropping so much rain water that the water sinks all the way down to the roots. The meaning here is literal, right to the roots of plants and trees. There is also a figurative (suggested) meaning: the "April showers" pierce "the drought of March" to *its* root. The meaning here is that the rain is so strong and plentiful that the earlier drought is totally ended. I like the way the literal and figurative meanings work easily together. Anyway, following this interpretation of the first two lines, we have

> When April with its sweet showers
> has pierced the drought of March to the root.

Ah, now that seems to make sense. To solve this problem, we had to figure out the relationship of the parts. We did so by common sense. We figured out the relationship in context. To make a sensible relationship of the parts, we had to rearrange the parts. This kind of deciphering work we are familiar with. It is the fourth convention, sequencing. The relationship of the parts of a sentence is determined first by sequencing and second by rules of grammar. Sequencing and grammar work together to indicate the overall meaning.

Let's go on to the next two lines:

> And bathed every veyne in swich licour
> Of which vertu engendred is the flour.

Let's try it with the words I listed:

> And bathed every vein in switch liquor
> Of which virtue engendered is the flower.

That doesn't work very well, does it? Well, we tried. Now what can we do? At least "And bathed every vein" looks pretty good. Since the subject of the verb "bathed" we know is "April showers," then "vein" could be a vein of the ground (or perhaps of a leaf). The word "vein" makes the ground sound like a body, but that may be the writer's purpose. Ground, receiving spring rain, is like a body coming back to life. Spring is the season of life beginning again.

But what about "swich licour"? Is the water "switching to liquor" as it mixes with the roots of plants and animals? That doesn't make much sense. And "liquor" is a depressant, and not a particularly healthy one.

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Does the next line help? We know that something happens to the flowers. We expect that the meaning involves the blossoming of spring. The meaning of "engender" (to give) supports this idea. Perhaps the rain water gives something to make the flower, or the rain water helps the flower to appear. But what does "virtue" have to do with it? Is it a "virtue" that the rain helps the flower? That sounds a little strange, doesn't it?

We certainly established the general subject of the coming of spring, and we have a lot of the words of the four lines, but without the meaning of "swich licour" and "vertu" we can't go much further. So here they are:

"swich licour"	means	"such moisture"
"Of whose vertu"	means	"by whose power"

So the critical words are "swich" meaning "such" and "vertu" meaning "power." Let's see what we have:

And bathed every vein in such moisture
By whose power engendered is the flower.

Again, as with the first two lines, the overall meaning doesn't come clear with a literal translation. So let's guess that the problem is the same as the one we encountered in the first two lines, the problem of sequencing.

EXERCISE 8.12

Is there another way to sequence the words in the two lines? •

My response to Exercise 8.12

There is no problem with sequencing in the third line. The problem is with the fourth line. What about sequencing it like this:

By whose power the flower is engendered.

This sequencing is better, isn't it? Now the line makes sense. "Engendered" means here "given strength" or "given life." So let's see what the four lines look like in our deciphering:

When April with its sweet showers
Has pierced the drought of March to the root
And bathed every vein in such moisture
By whose power the flower is engendered.

I am wondering if you noticed why we had the sequencing problem in lines two and four. Any ideas? Look again at the original four lines. Do you notice anything about the line-ending words?

EXERCISE 8.13

Do you have any idea of what caused the sequencing problem in lines two and four? •

My response to Exercise 8.13

The rhyme caused it. The writer moved the parts of the sentence around in order to make the lines rhyme in pairs. Lines 3 and 4 aren't that obvious a rhyme, but probably the words rhyme when you say them.

That's right — unless, of course, the sequencing was normal to the language of its author's time.

CHAPTER 9

Using Deciphering Techniques to Crack Another Language: Part II

These last few chapters may have been pretty hard or perhaps pretty slow. I don't know. Deciphering isn't easy. But you are getting the hang of it, so let's try some more. I bet it's easier. Here are the next lines of what we were working on in the last chapter.

5 Whan Zephirus eek with his sweete breeth
6 Inspired hath in every holt and heeth
7 The tendre croppes, and the yonge sonne
8 Hath in the Ram his halve cours yronne,

These four lines break into two parts at the comma in line 7. Let's look at the first part.

EXERCISE 9.1
Which words in the first part do we already know from English? •

My response to Exercise 9.1
We know: with, his, in, every, and, the, tendre.

EXERCISE 9.2
What other words can we add to this list either because we have learned them from the previous lines we deciphered or because they closely resemble words in English? •

My response to Exercise 9.2
From the previous lines we know that

"whan" means "when"
"hath" means "has"

And the following words closely resemble words in English:

"sweete"	resembles	"sweet"
"breeth"	resembles	"breath"
"heeth"	resembles	"heath" (land without trees)
"croppes"	resembles	"crops"

EXERCISE 9.3
What words does that leave in this first part? •

My response to Exercise 9.3
The remaining words are: Zephirus, eek, holt.

I don't expect you to know that they mean. I didn't know them until someone told me:

"Zephirus"	means	"the west wind"
"eek"	means	"also"
"holt"	means	"wooded land"

So what do we have? Let's see.

> When the west wind with his sweet breath
> Inspired has in every wooded land and heath
> The tender crops. . . .

"Inspired" means here literally "breathed into."

EXERCISE 9.4
How would you rearrange the sequencing of words in this first part? •

My response to Exercise 9.4
I would rearrange the sequencing this way:

> Also, when the west wind with his sweet breath
> Has breathed into the tender crops in every
> Wooded land and heath,

That sounds pretty clear and sensible. All right, let's move along to the second part

> . . . and the yonge sonne
> Hath in the Ram his halve cours yronne

Instead of making our list of known words and words resembling words in English, let's just go for it. You probably have guessed that "yonge sonne" is "young sun," that "halve" is "half," and that "yronne" is "run." So what do we have?

EXERCISE 9.5

How would you decipher this second part? •

My response to Exercise 9.5

This second part comes out this way:

> . . . and the young sun
> has in the Ram his half course run,

and this literal deciphering can be changed to:

> . . . and the young sun
> has run his half course in the Ram.

Fine, but what does it mean? Here you deserve some help. "Ram" refers to Aries, the first sign of the Zodiac. "Halve cours" means the second half of the sun's course, which falls in April, the time of spring. The line describes where the sun is at this time of year.

All right, that wasn't too hard. Here is some more:

> 9 And smale foweles maken melodye
> 10 That slepen al the nyght with open ye
> 11 (So pricketh hem Nature in hir corages)

There are many new words here, but I think you can guess some of them. Try. Go ahead and take a shot at lines 9 and 10.

EXERCISE 9.6

What do you make of lines 9 and 10? •

My response to Exercise 9.6

Here is how I decipher them:

> And small fowl make melody
> That sleep all the night with open eyes

That sounds pretty good. It certainly makes sense. How does it compare with your version?

Line 11 is harder—but maybe not so hard if you know the two pronouns:

"hem"	means "them"
"hir"	means "their"

"Hir" looks like "her," but it means "their." "Corages" looks like "courage," doesn't it? And the meaning is close. "Corages" means "hearts." So line 11

(So pricketh hem Nature in hir corages)

means

(So pricketh them Nature in their hearts)

That literal translation can be changed to

(So nature urges them in their hearts)

"Nature" is urging the birds to "maken melodye." So all these lines are about spring and the return of life. Now we will see the effect of spring on some of the people:

12 Thanne longen folk to goon on pilgrimages
13 And palmeres for to seken straunge strondes
14 To ferne halwes, kowthe in sondry londes

Pretty hard? Harder than the lines before? Let's see what we can figure out. The words we know are:

folk, to, on, pilgrimages (line 12)
And, for, to (line 13)
To, in (line 14)

That's not a whole lot, but perhaps we can do some guessing. If "whan" means "when," then "thanne" might be "then" (and not "than"). "Goon" is probably not our word "goon" (a stupid person) because in context that doesn't make sense. The word "goon" may just be a form of the verb "go" because that would make the last three words of the line "go on pilgrimages," which makes good sense. What about "straunge"? Couldn't it be "strange"? And what about "sondry"? It could be "sundry" or "various." And "londes" might be "lands." Let's try these.

Then *longen* folk to go on pilgrimages
And *palmeres* for to seek strange *strondes*
To *ferne halwes, kowthe in various lands*

I have italicized the words we haven't tried to guess. I bet you would guess "longen" if the line were written this way:

Thanne maken folk longen to goon on pilgrimages

"Longen" means "to long for." "Palmeres" is just another word for "pilgrims." "Strondes" means "shores." "Ferne halwes" are "distant shrines," and "kowthe" means "known." So these lines can be deciphered like this:

> Then folks long to go on pilgrimages
> and pilgrims seek strange shores
> of distant shrines known in various lands

So, overall, we have a description of spring as the time when people think of going on a pilgrimage, and the more experienced pilgrims head out on longer journeys to far away, holy places.

Here are the last five lines we are going to decipher:

> 15 And specially from every shires ende
> 16 Of Engelond, to Caunterbury they wende,
> 17 The hooly blisful martir for to seke
> 18 That hem hath holpen whan that they were seeke.

Let's italicize the words we know:

> *And* specially from every shires ende
> *Of* Engelond, *to* Caunterbury *they* wende,
> *The hooly blisful martir for to* seke
> *That hem hath* holpen *whan that they were* seeke.

EXERCISE 9.7

What other words here can you guess at? Can you guess at *all* the remaining words? •

My response to Exercise 9.7

I will try to guess at all the remaining words.

"specially"	means	"especially"
"shires"	means	"some sort of place"
"Engelond"	means	"England"
"Caunterbury"	means	"Canterbury," (a place)
"wende"	means	"wend, go"
"seke"	means	"seek"
"holpen"	means	"hope"
"seeke"	means	"sick"

Pretty good. A couple of little things. "Shires" is more specific than "some sort of place." It means "district." It is used today in England with this meaning and often appears at the end of a place name (such as Berkshire). "Holpen" does not mean "hope" but "help." And the word underlined earlier, "blisful," doesn't mean "blissful" but "blessed." (There is no way you could have known that.) So let's try these lines.

And especially from every shires end
of England, to Canterbury they wend (or go)
to seek the holy blessed martyr
who has helped them when they were sick.

This completes the deciphering of nineteen lines in another language. See how much of what we have done has stayed with you. Try reading the whole thing through in the original language.

Whan that Aprill with his shoures soote
The droghte of March hath perced to the roote
And bathed every veyne in swich licour
Of which vertu engendred is the flour;
Whan Zephirus eek with his sweete breeth
Inspired hath in every holt and heeth
The tendre croppes, and the yonge sonne
Hath in the Ram his halve cours yronne,
And smale foules maken melodye
That slepen al the nyght with open ye
(So pricketh hem Nature in hir corages),
Thanne longen folk to goon on pilgrimages,
And palmeres for to seken straunge strondes
To ferne halves, kowthe in sondry londes;
And specially from every shires ende
Of Engelond, to Caunterbury they wende,
The hooly blisful martir for to seke
That hem hath holpen whan that they were seeke.

How did you do? I'll bet it was a lot easier this time through. Can you read a lot more of this language than when you started? Did you decipher more of these lines than you thought you might be able to? Even if you can't remember a word here or there, you can still pick up on the general meaning, right? I'll bet you would have deciphered even more if it hadn't been for those sequencing problems. These problems might not have been there had the writer not chosen to write in rhyme.

And what about this old language anyway? Any idea what it is? It is called "Middle English." And yes, there is a form of English that preceded it. And yes, it is harder. But this is hard enough, right? Well, maybe not. Maybe you think now, after your deciphering, that it isn't so hard after all.

The writer's name is Geoffrey Chaucer. He is writing about the people who went on a pilgrimage to Canterbury, England. His book, *The*

Canterbury Tales, is divided up into different people's stories. The lines you deciphered are the first 18 of "The General Prologue," the introduction to the book.

At the time Chaucer wrote the book, most works of literature were written in Latin. That's right, Latin, because Latin was the language of the church, and the church was the place of learning and culture. Or in French, the language of the court. To write literature in "the common language" was a rather radical thing to do.

Chaucer has been "translated" into modern English, but I like the way his Middle English looks. It looks authentic. Here's a final section, for you to try on your own, just for the heck of it. See how much comes through on a first try.

> Bifil that in that seson on a day
> In Southwerk at the Tabard as I lay,
> Redy to wenden on my pilgrymage
> To Caunterbury, with ful devout corage,
> At nyght was come into that hostelrye
> Well nyne and twenty in a compaignye,
> Of sondry folk, by aventure yfalle
> In fellawship, and pilgrimes were they alle
> That toward Caunterbury wolden ride.

See if your school or public library has recordings of Middle English. It sounds great.

CHAPTER 10

Dropping One Convention

Can you read these lines?

> . . . they might as well try to stop the sun from rising tomorrow the sun shines for you he said the day we were lying among the rhododendrons on Howth Head in the gray tweed suit and his straw hat the day I got him to propose to me yes I first gave him the bit of seedcake out of my mouth . . .

Is it hard? If you have a problem with it, what is the problem? Does the writer conform to the conventions of English?

EXERCISE 10.1
Which convention or conventions of English does the writer break? •

My response to Exercise 10.1
The writer breaks only one convention, signaling devices. The writer does not capitalize or punctuate.

Actually, the writer does capitalize once ("Howth Head," the name of a place).

Here is how the passage goes on:

> . . . first I gave him the bit of seedcake out of my mouth and it was leapyear like now yes 16 years ago my God after that long kiss I near lost my breath yes he said I was a flower of the mountain yes so we are flowers all a woman's body yes that was one true thing he said in his life and the sun shines for you today yes that was why I liked him because I saw he understood or felt what a woman is and I knew I could always get round him . . .

I love this writing. It is from *Ulysses*, a novel by James Joyce, an Irish writer. Published in 1922, the book was, and still is, a source of controversy. It is a particularly challenging book you are not likely to see until a literature course in college. The novel is the story of one day in the lives of two men, and the final chapter, from which this passage comes, is told by the wife of one of the two men. About ten lines later the final chapter ends like this:

> . . . and big wheels of the carts of the bulls and the old castle thousands of years old yes and those handsome Moors all in white and turbans like kings asking you to sit down in their little bit of shop and Ronda with the old windows of the posadas glancing eyes a lattice hid for her lover to kiss the iron and the wineshops half open at night and the castanets and the night we missed the boat at Algeciras the watchman going about serene with his lamp and O that awful deepdown torrent O and the sea the sea crimson sometimes like fire and the glorious sunsets and the figtrees in the Alameda gardens yes and all the queer little streets and pink and blue and yellow houses and the rosegardens and the jessamine and geraniums and cactuses and Gibraltar as a girl where I was a flower of the mountain yes when I put the rose in my hair like the Andalusian girls used or shall I wear a red yes and how he kissed me under the Moorish wall and I thought well as well him as another and then I asked him with my eyes to ask again yes and then he asked me would I yes say to yes my mountain flower and first I put my arms around him yes and drew him down to me so he could feel my breasts all perfume yes and his heart was going like mad and yes I said yes I will Yes . . .

I think that's wonderful writing. What do you think?

EXERCISE 10.2
Do you think the dropping of the signaling devices helps or hinders the impact of the passage? •

My response to Exercise 10.2
My opinion is that the dropping of the signaling devices helps the impact of the passage because the words flow more quickly. The phrases roll one on top of the other, like waves of the sea; and I think the writer wants this effect. It makes the ending more dramatic.

EXERCISE 10.3
Try an experiment in writing something like this ending of *Ulysses*. Write a description in which you drop the signaling devices of punctuation and capitalization. You might want to write about a scene or event that was particularly exciting or filled with action. First, choose the thing you're going to write about, and then write very quickly, without stopping to think. Let the pencil or pen do the thinking, on paper. Write this way for a minimum of five minutes. Remember, don't use any punctuation or capitalization. •

Is this fun to do? Do you like what you came up with? Does the dropping of signaling devices help your piece of writing? If you are writing action, you certainly increase the speed of your narrative by dropping the signaling devices.

EXERCISE 10.4
Do you think that dropping signaling devices in poetry is the same as it is in fiction? •

My response to Exercise 10.4
No, I don't think so, because a poetry line ends before the righthand margin. In poetry the line endings are a sort of punctuation, a pause. The poet can end a line at the end of a sentence or phrase and that way avoid the confusion that may arise from dropping signaling devices.

If a poet uses very simple phrasing and generally ends the lines at the end of a sentence, the absence of signaling devices is no problem for the reader. Here is an example:

[From "Tall Tale of the Tall Cowboy"]

How they buffaloed both sides
How they gave them bullets to bite
How they swallowed hard
when the Great Cowboy laughed on TV
How the Great Cowboy waved his hand
and disappeared over the horizon
How he walked softly and carried a big nuke
How he brandished it like a hunting rifle
How the President of Mexico gave him a great stallion
How he tried to mount it as the cameras rolled
How he slung his hunting rifle behind him and swung up
How the people hid in their houses
How the hot sun beat down on the mined land of the world
How the swinging-door saloons stood empty and silent
How the natives were restless and beat their drums
in the concrete jungles of the world

The poem is by the contemporary Californian poet Lawrence Ferlinghetti. This is the middle section of the poem.

EXERCISE 10.5
What exception does the poet make to the dropping of signaling devices? •

My response to Exercise 10.5
The poet capitalizes the first word of the line when the word is "How." Many of the lines begin with "How." The poem is actually a series of "How" clauses. Can you guess whom the poem is about? It's probably about President Reagan. The poem is political satire. The poet is poking fun at what he believes the President did wrong. As light as the poem is, the poet may very well be dead serious. This is what makes satire interesting. The contrast between the tone of a satirical poem and its intention is often striking. Here is how the poem goes on and finishes:

How the Indians said How Come instead of How
How the Indians hid in the hills
How the Great Smiler smiled no more on TV
How he came on his great white stallion
propped up from behind with a big stick
How he stood tall in the saddle
and looked straight into the cameras
How the old hands hid in the old corrals
How the deputies deputized themselves
and took to the roofs
How the people trembled in their houses
How they thought it was the final shootout
How a great hush fell upon the plazas of the world
How the Great Cowboy put on one black glove
How his eyes narrowed and his hand reached behind him
How suddenly there was nowhere to hide
How suddenly there was no turning back
How suddenly it was High Noon

Do you know why "High Noon" is capitalized? Do you know your movies? How about famous cowboy movies? *High Noon* is a famous cowboy movie. "High Noon" refers in the movie to the time of the final gunbattle in which Gary Cooper takes on the bad guys. The movie is a classic—but here in the poem the name of the movie has a frightening suggestion. Put the idea of the President of the United States as the "Great Cowboy" together with the idea of "High Noon" and you've got yourself a shootout that goes well beyond a corral in the west. It means world war. Lawrence Ferlinghetti is dead serious in his satirical poem "Tall Tale of the Tall Cowboy."

EXERCISE 10.6
Does the dropping of the signaling devices (with the exception of capitalizing "How") make the poem harder to read than if the signaling devices were included? •

My response to Exercise 10.6
No, I don't think so. There is nothing complicated about the sequencing of the words; therefore, the overall meaning of each "How" is clear.

EXERCISE 10.7
Write your own "How" poem, beginning each new thing with a capitalized How. Don't use periods at the ends of the lines. Have the poem build up to something that's just about to happen, then stop right there. •

How about this next poem? Does it make sense?

But I Loved My Grandma

A sweet pea
stuck in each grass-stained ear
sneaks up barefoot
behind
soapsuds Grandma
with a dead-fly
flyswatter
swats her topknot
hard hard hard
take that
for not frying
doughnuts
you promised me
and that
for not telling
about
Jesse James
and this
for being so
old old old

The first time you read this poem, you can tell that a little kid is swatting grandma's "topknot," but beyond that fact the poem may be a little confusing. Even though the words are simple, the poem isn't easy to read, at least not in the beginning. I mean, how can "a sweet pea" "sneak up barefoot"? And what's a "dead-fly flyswatter"?

EXERCISE 10.8
What do you think a "dead-fly flyswatter" is? •

My response to Exercise 10.8
A "dead-fly flyswatter" could be a flyswatter with a dead fly still stuck to it.

If so, it's gross, sure, but it's true that sometimes the fly sticks to a flyswatter when you swat it.

EXERCISE 10.9
What do you make of the "sweet pea" sneaking "up barefoot"? •

My response to Exercise 10.9
This question is harder. I think it is a little kid with "a sweet pea stuck in each grass-stained ear" who "sneaks up barefoot." The little kid is the grandson.

If this explanation makes sense, then the first four lines would normally read like this:

> With a sweet pea
> stuck in each
> grass-stained ear
> the boy sneaks up barefoot

I added "with" at the beginning and "the boy" in line 4. I'm sure the poet Dave Etter could have added those words or any other to make these lines clearer. He chose not to. Why? To move the poem along more rapidly and make it more interesting. Certainly the details gain more notice this way. But it's chancy. That's what poets do, take chances with language. It is part of the fun of experimenting with words. That doesn't mean, though, that it always works. That's up to the reader. What do you think? I'm not asking about only the first time you read the poem. The second time counts just as much, if not more.

By the way, I'm making a calculated guess that the kid in the poem is a boy.

The question of clarity doesn't stop with the first four lines. The two lines we have already mentioned—"with a dead-fly flyswatter"—may be confusing. What is a "dead-fly flyswatter" and who has it? The little kid has the flyswatter; that becomes obvious as we read on. Yet when these two lines appear in the poem, they come right after "Grandma," so it may sound like "soapsuds Grandma with a dead-fly flyswatter." If this is a problem of clarity, isn't it cleared up right away, though, by the next line, "swats her topknot"? Doesn't it have to be the little kid swatting the Grandma's topnkot with the flyswatter? If you agree, then this part of the poem works because it is both clear and vivid.

My favorite spot in this poem is the word "this" in the third-to-last line. Such a simple, everyday word, but the way it appears here, I love it. Line 12 ("take that") and line 16 ("and that") set up the expectation that if there is to be another one, it will be introduced by "and that." But the poet writes "and this." A very small change from "that" to "this," but for me the change to "this" makes the last action the most immediate and the most important of the three. Which it is—"and this for being so old old old."

Which brings up another question about this poem: why the little kid swats his grandma. Is he mean? Doesn't he like her? The poet says in the title "But I loved my grandma." So maybe our question should be, how can the poet love his grandma and keep swatting her topknot? What do you think? Well, maybe he swats her *because* he loves her. Does that make any sense? What do you think?

Perhaps the question is not how he can swat her and say he loved her but why he swats her "for being so old old old."

EXERCISE 10.10

Why would he swat her "for being so old old old"? •

My response to Exercise 10.10

The only reason I can see why he would swat her "for being so old old old" is that he doesn't want her to be so old, but there is nothing he can do about it.

Perhaps the little boy wants his grandma to be younger so that she can play more with him, or maybe he knows down deep that his grandma doesn't have long to live. Young kids have a particularly hard time with the realization that someone they love is not going to be alive much longer. You probably know this. Adults have a hard time with this realization, too.

I like this poem. I like the way it takes me from light, funny thoughts to serious, loving thoughts—and it does so very quickly. What I especially like about this poem is that I feel these thoughts directly from the scene. The poet doesn't tell me what to feel. If he did, the poem would be ruined. I like the poem the way it is. Sure, I have to do a little work to understand the scene fully, and there are different ways to interpret the meaning, particularly at the very end. But I think that this openness of interpretation makes the poem stronger, not weaker. What do you think?

CHAPTER 11

Dropping More Than One Convention

Dropping the convention of signaling devices is taking a chance, but not a very big chance, for signaling devices is the last of the five conventions. But to drop, in addition, one or more of the other conventions, now that is really taking a chance. The writer whose work we are going to look at here did just that. His name is E. E. Cummings. He was a contemporary of James Joyce. These two writers are two of the most important innovators of the modern movement in literature. This movement does not have an official beginning date or ending date, but it is generally thought of as the period between World War I and World War II (roughly between 1910 and 1940). Literature since World War II has been called, for lack of a better name, "contemporary literature."

E. E. Cummings wrote poems, plays, novels, and essays. He is best known for his poems. What is not commonly known is that he was also a painter. He loved to paint and he painted a lot. He was attracted to the possibilities for visual experiment that the typewriter affords.

Beautiful

is the
unmea
ning
of(sil

ently)fal

ling(e
ver
yw
here)s

now

Can you read this? It's tricky, isn't it? But read through it a couple of times; I bet you catch on. Try again. The words start coming together, right? The poem no longer appears as strange as it may have at first. Do you like it? It's interesting, anyway, isn't it?

A good way to make sure you understand the words is to write the poem out as prose; that is, all the way out to the righthand margin.

EXERCISE 11.1
Write the poem out as prose. •

My response to Exercise 11.1
"Beautiful is the unmeaning of silently falling everywhere snow."

That takes some of the fun out of it, doesn't it? But at least we are sure we have the words right.

EXERCISE 11.2
Write the poem in its two parts, first the part not in parentheses and, second, the part in parentheses. •

My response to Exercise 11.2
The part not in the parentheses is "Beautiful is the unmeaning of falling snow." The part in parentheses is "silently everywhere."

Now let's see how Cummings experimented with the conventions of English.

EXERCISE 11.3
How did Cummings treat the conventions of English in his poem "Beautiful?" •

My response to Exercise 11.3
At first, it looks as if Cummings ignored the conventions of English altogether, but when you look more closely you see that he experimented with almost every convention in a particular way. He uses the alphabet and he sets off at least some of the words with a space on either side. Other words he does not; he breaks them up and runs them together. So with the second convention he is already experimenting. As to the third convention, the poem reads, as in normal English, from left to right and from top to bottom, but the lines are so short that the poem seems to

read basically from top to bottom. As for sequencing, the fourth convention, you can't exactly call this normal English. The part not in parentheses reads as a normal English sentence, "Beautiful is the unmeaning of falling snow," with the obvious exception of the made-up word "unmeaning." But once you add the words in parentheses, the sentence becomes a little strange. Whereas there is nothing strange about modifying falling with "silently" placed before it, it is very strange to modify "snow" with "everywhere" before it. But still, we know what it means. "Everywhere snow" does make sense. As for signaling devices, he does capitalize the title "Beautiful," but he doesn't put a period at the end. Instead, he uses parentheses twice in a way that almost creates a second part of the poem.

It sounds as if Cummings retained the alphabet but experimented with the other four conventions.

EXERCISE 11.4
Do you think the break with any one convention is more important than the breaks with the other conventions? •

My response to Exercise 11.4
As much as he experimented with direction, sequencing, and signaling devices, I think that the most important breaking with the conventions of English is the breaking with the convention of word formation. The breaking up of the words into groups of letters and a single letter is what makes the poem hard to read, at least at first.

EXERCISE 11.5
Do you think the breaking up of words in the first half of the poem is as hard to grasp as it is in the second half of the poem? •

My response to Exercise 11.5
No, I don't think so. The way he breaks up "everywhere" in the second half is harder than any word-breaking in the first half.

"Everywhere" is spread out over four lines. The first two lines of the word are broken at the syllables, as we normally break a word and add a hyphen at the end of a line of prose. "Ever" is broken between the *e* and the *v*, and the second syllable is left as a line. But the third syllable, *y*, is not kept separate. Instead, it is directly followed, without a space, by the *w* of "where." How do we read *yw*? There is no common sound for *yw*. Then, instead of "where," we read "here" on the fourth line of "everywhere." This only makes the word less clear.

Therefore, Cummings is not only breaking up words but he is doing so in an "unconventional" way. The conventional way is to break the word between syllables. For example, the word "hyphen," if it is to be broken at the end of a line, would be broken between the *y* and the *p* to keep the two syllables intact: "hy-phen."

Every word that Cummings breaks up he does so in this non-syllabic, unconventional way. These words are "unmeaning," "silently," "falling," "everywhere," and "snow." You might think that the *way* he breaks up these words is more important than the fact that he breaks them. For example, wouldn't the first four lines of the poem be easier if they read like this:

> is the
> unmean
> ing
> of(si

The only changes here are making the second syllable of "unmeaning" complete and making the first syllable of "silently" complete.

EXERCISE 11.6
Does the poet also run words together? •

My response to Exercise 11.6
It looks as if he does, but the only space he drops is before beginning parentheses and after an ending parenthesis. For example, in the line "ently)fal" there would normally be a space between the parenthesis and the *f*. This seems like such a little change, but its effect on the page is pretty big.

The exercises up to this point have been about the poet's experimenting with the conventions of language. The poem is generally considered a big departure from normal English. The reasons for this view are pretty obvious, aren't they? But your knowledge of conventions allows you to say precisely in what way the poet broke from the conventions. Perhaps this understanding leads you to conclude that this poem is not such a big departure from the conventions of English. On the other hand, even with your understanding, you may feel that this poem is a radical departure.

EXERCISE 11.7
How big a departure from the conventions of English do you judge this poem to be? •

This question is finally a matter of opinion because you are attaching importance to what the poet did differently from the conventions of English. I am going to leave this question with you and go on to what the poet is actually expressing. That way we will have a context for the experimenting. Having a context provides us with a purpose for the poem. This we need in order to evaluate the altering of the conventions.

We are helped in thinking about what the poet is expressing in the poem by the fact that the poem is a statement, "Beautiful is the. . . ." And the statement is noticeable for the arrangement of the words in the sentence. The normal sequencing of words would be a reversal of the actual ordering. The sentence would *end* with "is beautiful." The way the poet has sequenced the words suggests that he wants to express something about the nature of beauty.

EXERCISE 11.8
Do you see the poet expressing an idea about beauty? •

My response to Exercise 11.8
I have no way of telling exactly what the poet has in mind, but judging by what he says I certainly notice the word "unmeaning." It jumps out of the sentence. The word conveys the idea that the scene of the snow falling is just that; it doesn't possess a symbolic meaning outside of itself. Yet it is beautiful. More specifically, the scene is beautiful *for* its "unmeaning." So the poet could have said "Beautiful is silently falling everywhere snow." By adding "the unmeaning of" after "is" the poet seems to be emphasizing that beauty is not a matter of meaning, but is, on the contrary, a matter of something else entirely.

That makes sense. Cummings certainly emphasizes that beauty is not a matter of meaning. But what then is it a matter of? Well, let's consider a scene which we notice as being beautiful. We can experience this scene as an idea. Ideas come to us in words, so we might actually say to ourselves, "This scene is beautiful." But there is another way. We are so captivated by the beauty of a scene that we are totally absorbed by it. We don't bother to think about it at the time. We don't need to, for we know intuitively (by intuition, by feeling), and we don't want to because we don't want to interrupt our experience with thinking. The first kind of experiencing of beauty is abstract, intellectual, conceptual. It occurs within our minds. The second kind is immediate, direct, engrossing. It occurs between us and the scene itself, as a feeling. Perhaps this second kind of experience of beauty is what the poet is expressing.

EXERCISE 11.9

Do you see anything in the poem that suggests that the poet favors the immediate experience, the felt experience, rather than the thought-about experience? •

My response to Exercise 11.9

Yes, the last word of the poem, "now." It is immediate.

EXERCISE 11.10

Do you see anything else that expresses immediacy? •

My response to Exercise 11.10

The "here" on the previous line. "here" and "now" is about as immediate as you can get.

The "here" and "now" at the end of the poem certainly suggest that Cummings wanted to express the immediacy of the experience of beauty. He even skipped a line to set off "now" as the last word. Besides, the words aren't added to the poem as ideas. Instead, they emerge directly from the description of the scene. "Here" comes right out of "everywhere," and "now" comes right out of "snow." "Here" and "now" are a part of the actual scene.

EXERCISE 11.11

Do you think the way Cummings brings notice to "here" and "now" proves that his purpose is to express the immediacy of the experience of beauty? •

I leave that up to you and ask you about something else in the poem. Did you notice the parentheses? Do they suggest any sort of pattern to you? They suggest one to me. If you draw a line connecting all the parentheses, you get a waving line, which suggests to me the motion of falling snow. This may be accidental, but I doubt it. The poem seems, from what we have discussed so far, to be a very carefully crafted thing. Obviously, the short lines give the poem a vertical shape that suggests falling. Why not then a motion within the shape? It would be a nice addition to the poem, wouldn't it?

If the poet was this thoughtful and clever and careful and imaginative about every detail of the poem—and my guess is that he was, for remember, he was a painter too—then we have to ask why he broke up the words as he did. We have two reasons already. The first is to highlight "here" and "now." The second is to make the poem basically vertical. These reasons account for breaking up the words in general. They do not, however, account for breaking them up specifically in a non-syllabic fashion. What is gained, for example, by writing "unmea/ning" instead of "unmean/ing?" This is an important question about the poem because although it appears to be only a detail, it is critical to his most important break from the conventions of English.

EXERCISE 11.12
What, if anything, do you think is gained or lost by the non-syllabic breaking of the words? •

My response to Exercise 11.12
This is a hard question. It's puzzling because it would seem that he could accomplish what he wanted by breaking the words in the conventional way, the syllabic way. But he didn't, and perhaps we should assume, at least for the time being, that he had a purpose in mind, a purpose beyond just making the poem puzzling.

The poem is certainly more puzzling for the way he broke up the words. So why not ask what he gains by making the poem more puzzling? Well, it takes us longer to figure out what he is saying. Once we do, though, the poem is suddenly clear, at least what it says. So what has Cummings gained by creating such an experience of the poem for us, an experience of puzzlement to sudden clarity?

I think the poet wants to involve us in what he is saying. I think he wants to create an experience for us. I think he wants the particles of the poem, the broken words, to reassemble in our heads. He obviously wants us to like the poem better for the way it is written. That means the same as enjoying our experience of reading the poem. And if we enjoy reading the poem, perhaps we see the scene in a fresh, new way. Every poet wants to use the language so that it seems new and fresh because what the poet is expressing comes across directly, powerfully.

EXERCISE 11.13
Do you think the scene of the falling snow is more vivid for the way Cummings uses the language?

If your answer is "yes," then the poet has succeeded in doing exactly what the poem says. He has created for you an imaginative experience of the snow falling. This imaginative experience does not contain ideas. It is simply an imaginative experience that you have enjoyed. And isn't this precisely what the poem says, that beauty is an experience, not an idea? The snow isn't beautiful because of some way we can think about it. It is beautiful because that is how we experience it. We don't think about it being beautiful. It just *is* beautiful. We feel it. The experience is direct, powerful, clear, immediate. We don't need anybody to give us reasons why it's beautiful. We know it is beautiful.

EXERCISE 11.14

What do you think of what I have offered as a reason for the poet's non-syllabic way of breaking the words, namely that the poet wants the poem to be somewhat confusing at first in order to create for us an experience that demonstrates what he is saying in the poem about beauty? •

I want to leave this question with you. It's heady. The following discussion may help you form an opinion on this question.

Perhaps the easiest way to figure out what you really think about this poem is to consider how it would be if it had been written according to the conventions of English. For example:

> Beautiful
>
> is the unmeaning
> of silently falling
> everywhere snow

Or pulling back even farther to the conventions of English:

> Beautiful
>
> is the lack of meaning of snow
> falling silently everywhere

EXERCISE 11.15

Do you like either of these better than the poet's version? Why or why not? Perhaps you have another way that you prefer to the poet's version. •

My response to Exercise 11.15

I like the first one better than the second one, but I like the poet's version best. Here is another version I like, though:

Beautiful

is silently
falling
everywhere
snow

But this version isn't really a variation on the poem because it removes the phrase "the unmeaning of." Still, the best way to see what you really think of the imaginative technique that Cummings came up with is to try it out yourself. Looking closely at his poem is fine for appreciating the possibilities of visual experimenting on a typewriter. But the best way to test the possibilities is to fool around with them yourself.

EXERCISE 11.16

Write a one-sentence description and break with any convention of English you choose to in order to highlight your meaning. •

EXERCISE 11.17

How do you like your poem? What conventions(s) did you choose to break? Do you think your poem is too confusing for a reader to understand? Or do you think it is more interesting and enjoyable for the way you chose to write it? •

The "Beautiful" poem is called an "ideogrammatic" poem. An "ideogram" is the picture of an idea, or an idea picture. This poem is ideogrammatic in that Cummings uses visual (or pictorial) ways to express an idea. As a painter, Cummings was particularly aware of the pictorial dimension of a poem, so it's only natural that he wrote many ideogrammatic poems. Here's another ideogrammatic poem by Cummings:

l(a

le
af
fa

ll

s)
one
l

iness

Can you read this? It's harder, isn't it? Cummings certainly pushed the technique further than in the poem "Beautiful." "Beautiful" is one sentence, whereas here you don't even have a sentence. But that deosn't mean you can't read it.

EXERCISE 11.18
What is outside the parentheses and what is inside the parentheses? •

My response to Exercise 11.18
The word "loneliness" is outside the parentheses, and "a leaf falls" is inside the parentheses.

The poem is just an image of an idea. "A leaf falls" is an image of "loneliness." The poem is set vertically, like "Beautiful," for the same reason, to set off a falling effect. The poem is different, though, for the way the poet uses parentheses.

EXERCISE 11.19
How is the poet's use of parentheses different in this poem from his use of parentheses in "Beautiful?" •

My response to Exercise 11.19
In this poem he sets the parentheses within a word. This he did not do in "Beautiful."

The poet's use of parentheses is more unconventional in this poem.

EXERCISE 11.20
Why do you think Cummings uses parentheses in such a unique way in this poem? •

My response to Exercise 11:20
He is probably trying to draw the image and the idea as close together as he can.

Cummings is not only an innovative poet, a poet who likes to experiment with the language, but he is also a very clever, playful poet. For example, he has a trick up his sleeve in this poem. He uses the idea of *oneness* to enhance the effect of loneliness. Take a look at how many times the idea of *one* appears in the poem.

EXERCISE 11.21
How many times does the idea of one appear in this poem? •

My response to Exercise 11.21

The idea of one occurs in the first line with the first *l* of "loneliness." The *l* by itself looks like a 1 (the number one). The idea of one occurs again in the first line with the *a*. The idea occurs again in line 2 with the *l* and twice in line five with the two *l*'s. It occurs in line 7 with the word "one," and again in line 7 if you bring down the *l* from the first line, past the parentheses, and join it up with the word "one," which makes "lone." The next line, the next-to-last of the poem, has another *l* in it, and the last line completes the word "loneliness." Also, the whole poem looks like a one, coming down in almost exactly the same width to the bottom, "iness," which is longer, like the base of a one. Now I don't know if you would count all these, but if you do you would have the idea of one occuring nine times. That's nine times in nine lines. Does *that* make another *one*?

Pretty clever. Too clever? The poem is certainly an image of its meaning. You may even feel that the poem is more of a picture than it is a group of words.

EXERCISE 11.22

Do you like the poem more or less for being more ideogrammatic than "Beautiful?" Which poem do you prefer? •

Cummings certainly pushed this technique a long way. I really like the way lines 3 and 4 are a mirror image of one another, as if the leaf is floating back and forth, and then how the next line, the two verticals, speeds up the descent.

If you had seen this poem first, I wonder if you could have read it. It might have appeared at first glance to be indecipherable, unreadable. But we know that it isn't, and we can see, with our understanding of conventions, exactly what Cummings did to make the poem visually interesting. Perhaps you would have seen this without your understanding of conventions, but maybe not as quickly, and you might not have been as sure that you were right.

EXERCISE 11.23

Pick a single word (such as "incredible") and write down the first part of it. Then interrupt it by opening a parenthesis, like this:

In(

Then write the part that goes inside the parentheses; for example:

In(
the d
og s
poke
Eng
lish
)

Then add the rest of the original word:

In(
the d
og s
poke
Eng
lish
)credible

Instead of making it a skinny poem, you could do a fatter version, as in:

> Ou(just as I dropped the brick on my bare feet the books fell off the top shelf onto my head and you swung around and knocked my glasses off)ch!

Or you could use multiple parentheses to keep opening parentheses inside parentheses, like Chinese boxes:

> I (((my hair is blond ((the wheat is ripe (my uncle was in the Navy) and waving)) and long))) laugh.

Give it a try. •

CHAPTER 12

Indecipherable Literature

You might think the second poem by E. E. Cummings is as far as someone can go in fooling around with the conventions of language and still try to make something interesting, something that people will want to read again. But there is another kind of writing that makes even this second poem look pretty simple, yet once you figure it out, it too is really easy.

'Twas brillig, and the slithy toves
  Did gyre and gimble in the wabe:
All mimsy were the borogoves,
    And the mome raths outgrabe.

Does this make any sense at all? What are these words? Are they English? Are they hiding meaning behind them? Is this some sort of code or cipher? Is this secret writing?

EXERCISE 12.1

Read the four lines aloud a couple of times, until it's easy to say the words. Don't read them in a bored or flat tone of voice: put some dramatic expression in it.

Then ask yourself: now do the lines have a slightly different feeling for you? •

Perhaps you know these lines. They are from "Jabberwocky," by Lewis Carroll, who wrote *Alice in Wonderland.* They are nonsense. They are also famous nonsense. So maybe there is a difference between good nonsense and bad nonsense. I will leave that up to you, but one thing is certain about these lines from "Jabberwocky": they sure create a mood. But how can they do that if they are nonsense? This is a pretty good question, and you can answer it. Use your understanding of the conventions of English. These lines may be nonsense, but that doesn't mean Lewis Carroll ignored the conventions of English altogether. Perhaps he created the mood through a careful use of the conventions. Does that mean we can decipher the lines? What do you think? Let's see.

EXERCISE 12.2
Did Lewis Carroll follow any of the conventions of English in writing these lines from "Jabberwocky"? •

My response to Exercise 12.2
Yes, he did. He used the alphabet. He made words by leaving a space before and after each word. He set the lines so that they read from left to right and then from top to bottom. He sequenced the words—at least he seems to have—in a way that creates some sort of overall meaning, or maybe it is better to say feeling. And he used signaling devices; he punctuated and capitalized.

So one could say that Lewis Carroll used all five conventions. That doesn't mean that you can read it and figure out a meaning. It just means that the lines read as English or like English.

EXERCISE 12.3
Then what makes these lines hard to decipher? •

My response to Exercise 12.3
Obviously, the words themselves make it hard to read. He made up words. They aren't in the dictionary.

Yes, Lewis Carroll made up words. He made up so many words that either the lines are just for fun or are in some sort of code. But he didn't make up *all* the words. As a matter of fact, did he make up even half of the words in these four lines? No, he didn't. He made up 11 words, and there are 23 words in these four lines. The exact number isn't the point, obviously. It is the effect he creates by the words he did make up.

EXERCISE 12.4
Did he make up the more important or the less important words? •

My response to Exercise 12.4
In terms of our being able to understand the meaning, he made up the more important words.

It's hard to say much more than "more important" words without trying to figure out what the lines may mean. So instead of taking on that problem first, let's look at the words he did not make up, to see what kind of words they are.

Let's look at the first line. The words he didn't make up are "'twas" (an old form of "it was"), "and," and "the." In the second line the regular English words are "did," "and," "in," and "the." Look at the regular words of lines 3 and 4. What sort of words do you have in the four lines? What do you want to call them? The little words? The extra words? How about the helping words, or the secondary words? Actually, there aren't many.

EXERCISE 12.5
How many regular English words are used in the four lines? •

My response to Exercise 12.5
Seven, counting "'twas" as one.

Are these seven, regular English, little words enough to tie together the four lines so that they really do resemble English? Let's see. Let's look at the first line. The made-up words are "brillig," "slithy," and "toves." Let's try to ask two questions of these words at the same time. What do the words sound like, and what sort of word are they likely to be? In other words, does the sound of the word suggest an English word, and what is the grammatical function of each word?

EXERCISE 12.6
Try the sound association question out on the three made-up words (*brillig, slithy, toves*) of line 1: what do they sound like? What do they suggest? •

My response to Exercise 12.6
The sound of "brillig" doesn't suggest a particular word in English to me. If anything, it's the sound a frog might make, but I probably think of that because "toves" sounds like "toads." The mood of the four lines makes me read "brillig" as if it means something like "misty" or "spooky." "Slithy" sounds like "slimy."

You may have different answers to Exercise 12.6, but let's use the ones I offered, in order to check out what sort of words fit grammatically.

EXERCISE 12.7

What sort of word can "brillig" be? To use the language of grammar, what part of speech can "brillig" be? •

My response to Exercise 12.7

"Brillig" can be either an adjective, as in "'twas misty," or a verb, the main verb of a phrase like "'twas finished."

I vote for the adjective because of the feel of the word and because its second syllable doesn't suggest to me a verb.

EXERCISE 12.8

How about "slithy toves?" What parts of speech could they be? •

My response to Exercise 12.8

I think "slithy" is an adjective, like "slimy," and "toves" is a noun, like "toads."

Can you see reasons to support these guesses? Do adjectives usually come before nouns or after nouns? Before. Right. Besides, the *y* ending of "slithy" suggests that it's an adjective, like "bumpy," "sleepy," and "sleezy." How about "toves?" Sure, perhaps there are some adjectives ending in *s*, but *s* is the common way to make a plural in English. So the percentages favor "slithy" being an adjective and "toves" being a noun. That doesn't mean they are. It means that we *read* them that way. Lewis Carroll is using more than sound-resemblance to suggest a meaning for his made-up words; he is using the fourth convention of sequencing, too. He is *also* using the way we spell in English, particularly the ending of our words.

EXERCISE 12.9

What parts of speech are "gyre " and "gimble" likely to be? •

My response to Exercise 12.9

"Gyre" and "gimble" are likely to be verbs because they are preceded by "Did," which appears to be their helping verb as in "Did jump and jangle" or "Did gyrate and gambol."

"Gyre" is actually an English word. It is a noun, but for it to be a noun here it would have to be a collective noun as in "He made trouble." But look what would happen to "gyre" and "gimble" if each word ended in *s*.

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EXERCISE 12.10
If we added an *s*, what part of speech would "gyres" and "gimbles" appear to be? •

My response to Exercise 12.10
"Gyres" and "gimbles" would appear to be nouns, as in "Did jumps and cartwheels."

We can be sure that "wabe" is a noun because of "in the" that precedes it. Why? Because "in" is a preposition and a preposition takes either a noun or a pronoun to complete a prepositional phrase.

EXERCISE 12.11
Then why can't "wabe" be a pronoun? •

My response to Exercise 12.11
"Wabe" can't be a pronoun because it is preceded by "the." For "wabe" to be a pronoun the phrase would have to be "in wabe" as in the phrase "in them" or "in it." We don't say "in the them" or "in the it."

All right, how about the third line? If "borogoves" is a noun — and it sure looks like one with that final *s* — then "mimsy" must be. . . what? The only part of speech it can be is an adjective, as in "All cozy were the. . . ." What are these "borogoves" anyway, some sort of fantastic beavers?

These first three lines are pretty easy for figuring out possibilities for the parts of speech of the made-up words. At least they are easy compared to the fourth line. Here we have only two regular English words and they appear together at the beginning of the line. Then we have three made-up words in a row. You see what happens when you leave out the little, helping words? Trouble. This is hard. But let's try.

Let's try "mome" and "raths" together. Well, "raths" has an *s* at the end of it, so it could be a plural noun like "rats" or "rafts" (but not "wrath"). But verbs end with *s* sometimes too. How about "screams" or "rants"?

EXERCISE 12.12
Why can't "raths" be a verb like "screams" or "rants"? •

My response to Exercise 12.12

Because those verbs are in the present tense and the three lines before are in the past tense—"'Twas," "Did gyre and gimble," and "were."

EXERCISE 12.13

If, then, "raths" can't be a verb and is a noun, what is "mome"? •

My response to Exercise 12.13

"Mome" is probably an adjective because the common place for an adjective is before the noun when an adjective and noun are written together. Also, "mome" is preceded by "the."

The "the" is important here. Take it out and for "And mome raths outgrabe" you could have "madly rats scamper." But with "the" in the line where it is, "mome" must be an adjective because you can't say "And the madly rats scamper" if "madly" is meant to be an adverb rather than an adjective.

EXERCISE 12.14

If "mome" is an adjective modifying the noun "raths," then what is "outgrabe"? •

My response to Exercise 12.14

"Outgrabe" is a verb.

"Outgrabe" is a wonderful made-up word because it looks like "out grab" and sounds like "out grave," neither of which really makes sense, but which certainly convey a mood.

"The Jabberwocky" is nonsense. Nonsense is not meant to be deciphered. This poem cannot really be deciphered. But that doesn't mean we don't get some sort of meaning from it even if the meaning is primarily one of mood. (As Alice said in Wonderland, "Somehow it seems to fill my head with ideas—only I don't exactly know what they are!") Not only that, we can and did figure out how the words work together. We couldn't have done it without the little, helping English words because they act as the glue to hold the made-up words together. Sound association helped us, too. And sound is a very important part of the pleasure that Lewis Carroll has created for us.

As we found out, the suggested meaning or meanings of the words do not come from sound alone. It also comes from the relationships of the words. From these relationships we can figure out what part of speech each word is or probably is. The sequence of the words is important to our deciphering work. So is the way the words were written, especially the endings, because then we could use grammar to help us. Working with all these possibilities—sound, sequence, spelling, and grammar—is to work *in context*. Remember?

EXERCISE 12.15
Remove from Carroll's four lines the words

brillig
slithy
toves
gyre
gimble
wabe
mimsy
borogoves
mome
raths
outgrabe

and replace them with new nonsense words you make up and which have the same number of syllables as the words they replace. For example, "brillig" could be replaced by "hodo." (Optional: make your version use rhyme or off-rhyme, the way Carroll's does.) •

My response to Exercise 12.15
'Twas goonig and the fritty javes
 Did grink and gruddle in the flangs:
All sloozy were the gidderraves
  And the groon crads zopjang.

EXERCISE 12.16
Make a list of nonsense words, some short, some medium, some long. Use them in a sentence. •

My response to Exercise 12.16
Porf, deducamify, ot, zurt, othebon, murty, semblam, tor, hame, leated. Sentence: To deducamify the porf I had to tor the leated othebon, semblam the ot, and hame the murty zurt.

EXERCISE 12.17
Use your nonsense sentence as the opening of a story or short prose sketch.

Let the sentence kind of float around in your head. See what it makes you think of. (Mine makes me think of a worker in a factory in the future or in another galaxy, explaining how he (it?) repaired a machine. •

CHAPTER 13

Difficult Language

Are the deciphering techniques you have good enough to crack any kind of difficult writing? I wish it were true, but it isn't. Some kind of writing is simply too hard to decipher by the kind of effort that we have been making. And if I didn't tell you that, it wouldn't be fair. It's also important to give you some examples so that you'll know when to expect problems.

EXERCISE 13.1
How would you describe the kind of writing that would be, as far as you are concerned, the hardest to decipher, to understand? •

My response to Exercise 13.1
I think the hardest kind of writing would be full of lots of big words discussing a subject I know nothing about.

Yes, writing that demands a lot of knowledge about a particular subject would be hard for the average person to decipher fully. And the more specialized the field, the more difficult the writing will be.

But does language that is very hard to understand occur only in books? What I mean is, is difficult language always formal? Is it based on what you can learn only in school, for example? What about slang? I'll bet you know some words of slang that your parents, for example, don't know. Slang is not just new words; sometimes slang is a new meaning given to an old word.

EXERCISE 13.2
Can you think of a regular word that has been adopted by young people to express high approval? For example, what might you substitute for "wonderful" in the sentence "That is wonderful!"? •

My response to Exercise 13.2

The word I am thinking of is "awesome." It is a regular word I have heard used in this way lately.

Did you pick a different word? There are many — and they keep changing. Slang is always changing. Slang words rise and fall in popularity like a popular song. Some slang words and phrases do last. And slang develops differently in different areas. For example, if you moved to a different part of the country, you might hear different slang, so different that you couldn't understand it.

Slang is a special language, just as is the language of a particular field of study. Slang is at one pole of special language. Learned language is at the other pole. One is informal, the other is formal. The hardest new language to decipher is at either of the two poles of language: the informal (like slang) and the formal (like language in a book of a specialized field of study).

For example, the phrase "in your face" and the word "interface" would be hard to understand unless you had particular knowledge. In the sentence "I am going to shoot the ball in your face," it sounds as if the speaker is going to hit the other person with the ball. But "in your face" doesn't mean that. This usage of the phrase comes from basketball. The speaker is challenging the other person. No matter how closely the other person guards the speaker to prevent him or her from shooting, the speaker is contending that he or she is not only going to get the shot off, but do so by going right through or over the other person, and to score, too. The phrase is meant to challenge, obviously, but not to threaten the other person.

"In your face" is an example of informal language. "Interface" is formal language. "Interface" is a new word from computer terminology that is used often in business. In the sentence "We should interface with the new group," do you know what "interface" means? If not, the meaning of this sentence may not be clear. As in "in your face," the word "face" is the noticeable part of "interface." But what could it mean?

The meaning of the word isn't precise. "Interface" means "to relate to," but that isn't very clear either. In the example above, "interface" means to talk with and get to know, to establish a relationship.

If you are not around people who use the word "interface," you are not likely to know its meaning. Therefore, if you were to come across it first in written form, you would have difficulty understanding it, even if the context were helpful. The same is true for "in your face." If you are not around people using the phrase, you are not likely to know its meaning.

But of the two — "interface" and "in your face" — the slang term is probably going to be easier to understand because, as a rule, slang is more suggestive than formal language. Formal language tends to be abstract. For example:

> Gestalt psychology has demonstrated that we may know a physiognomy by integrating our awareness of its particulars without being able to identify these particulars, and my analysis of knowledge is closely linked to this discovery of Gestalt psychology.

This passage is hard. We are told that "Gestalt psychology"—whatever that is— has apparently "demonstrated" something, and the writer's "analysis of knowledge is closely linked to this discovery," whatever it is. But do we really understand what the writer is saying? Not likely. Some of the words here may be unfamiliar. But more important, what is the writer talking about? We need to know what the writer's subject is and then what he or she is saying about it. Sure, we are told the subject in the first two words, "Gestalt psychology." But what is that?

EXERCISE 13.3

Say you run across a passage about a special subject, such as Gestalt psychology, and you want to see if you can decipher the passage. What can you do? •

My response to Exercise 13.3

You can look the term up in the dictionary.

In this case, you could look up both words separately and then see if under "Gestalt" there is any mention of "Gestalt psychology." The dictionary is a good tool for this kind of detective work, or "research." Not only scientists perform research, but also anyone who looks for additional information about a particular topic.

EXERCISE 13.4

Can you think of another tool for "researching" the meaning of "Gestalt psychology?" •

My response to Exercise 13.4

Another research tool is the encyclopedia.

You are likely to find more about Gestalt psychology in an encyclopedia than in a dictionary.

There are other things you can do, too. If the writing comes from a magazine, check the start of the article. Read the title and the first couple of paragraphs. This may help. Flip through the magazine to get a sense of the other articles. Then read the last couple of paragraphs of the article. If the passage comes from a book, turn to the front. Try reading its preface. If you can make any sense of the preface, you may gain information that will help clarify the meaning of the passage you are trying to decipher.

Some writing, like that in the newspaper, is meant to be easy for just about everybody to read. Other writing is meant to be easy and clear only to some people, because the writer is writing for an audience that already knows a lot about the topic at hand. To understand a medical textbook, you have to know first a lot about biology and chemistry. Technical books on computer science sound like gibberish until you learn about computers. When you try to read difficult, specialized books, don't be discouraged: you aren't stupid, you just don't yet have the background knowledge necessary to understand them.

Once you have the background knowledge of a subject, you might go on and make important discoveries. Why not? Who says you can't? Or you might push the subject into new areas. Take computers, for example. When they first came out, we saw only numbers and letters on the screen. Who would have thought of pictures? Who would have thought of making a computer that you could program to make pictures?

Someone did. Someone experimented with computers to see if a computer could be adapted to make pictures, and from this experimenting came computer graphics. That is the name of the new field of making pictures with computers. These pictures make computer arcade games look terrific.

A new field develops its own language. Just as each sport has its own special terms—official and unofficial—so does computer graphics. So does microelectronics. So does biotechnology. These are all new fields. Between the time you began school and the time you finish school, more new fields will develop. You may go into a field of work that doesn't exist today. This is why your teachers insist that the most important thing to do in school is to learn to think—and the second is to learn to express yourself clearly. Think clearly, read well, and write clearly— that's what counts. Then you can take on any specialized language, even ones that don't exist yet.

But does that mean that you should automatically respect all special writing of a formal kind? You learn in school to respect writing that sounds important, that sounds learned and serious. But this doesn't mean that all specialized writing is for real. Some writers may be bluffing. They may just want to *sound* good. They may want to impress their readers, without committing themselves to saying anything specific. They use fancy phrases to disguise their lack of content. As long as they are good at handling the special language, they figure that they can get away with saying next to nothing. So you don't have to assume that everything that looks impressive is genuine. Just because a piece of writing may sound learned and profound, that doesn't mean it really is. So challenge the writing. Look at it closely. Try to get past the special vocabulary and see what, if anything, the writer is actually saying. The less the writer seems to be saying, the more suspicious you should become.

Good writers have been reminding us for many years that overblown writing is just a disguise. The modern English writer George Orwell is well known for his novels *1984* and *Animal Farm*; he deserves credit too for his essay "Politics and the English Language." In this essay, Orwell cites examples of vague, pretentious writing in science, business, education, art, politics, and psychology. Orwell claims that "this mixture of vagueness and sheer incompetence is the most marked characteristic of modern English prose, and especially of any kind of political writing." To get his point across, Orwell cites a well-known verse from Ecclesiastes in the Bible:

> I returned and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favour to men of skill; but time and change happeneth to them all.

And then Mr. Orwell rewrites this passage in a parody (making fun) of modern overblown English:

> Objective consideration of contemporary phenomena compels the conclusion that success or failure in competitive activities exhibits no tendency to be commensurate with innate capacity, but that a considerable element of the unpredictable must inevitably be taken into account.

A wonderful word for the phony kind of writing that is creeping more and more into our life is "gobbledygook." Stuart Chase uses this word as the title of an essay in which he takes up where Orwell left off. Chase makes fun of pretentious language by "translating" passages of it, or, you might say, deciphering it. For example:

A New Zealand official made the following report after surveying a plot of ground for an athletic field:
"It is obvious from the difference in elevation with relation to the short depth of the property that the contour is such as to preclude any reasonable development for active recreation."
Seems that the plot was too steep.

An office manager sent this memo to his chief:
"Verbal contact with Mr. Blank regarding the attached notification of promotion has elicited the attached representation intimating that he prefers to decline the assignment."
Seems that Mr. Blank didn't want the job.

EXERCISE 13.5

Can you write a short, clear sentence and then rewrite it in a long, vague way? Overdo it. Have some fun. Write it so badly that you are sure that no one would ever take it seriously. You might be surprised, though. •

My response to Exercise 13.5

Here is my short sentence: "You may not go because I say so." And here is the same sentence rewritten in overblown language:

> Because of my recognition of what is and is not most beneficial to your maturation as a young person who cannot yet critically discriminate, you may not attend the social occasion of dubious merit.

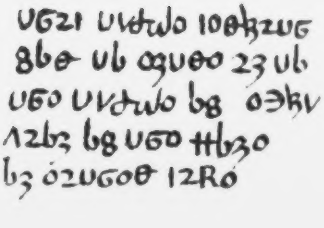
If you would like to have a little checklist against bad writing, George Orwell offers a good one in his essay:

1. Never use a metaphor, simile, or other figure of speech which you are used to seeing in print.
2. Never use a long word where a short one will do.
3. If it is possible to cut a word out, always cut it out.
4. Never use the passive [voice] where you can use the active [voice].
5. Never use a foreign phrase, a scientific word or a jargon word if you can think of an everyday English equivalent.
6. Break any of these rules sooner than say anything outright barbarous.

These rules, written in 1945, just after World War II, will do just fine today.

CHAPTER 14

Ciphers Invented by Writers



Can you read this? It's in Middle English. Dirty trick, huh? I can't read it either. Maybe I could if I spent days on it. You probably could too. But at least we have heard of the person who wrote it, Geoffrey Chaucer. Do you remember him? Do you remember your deciphering of a passage from Middle English? It began, "Whan that Aprill with its shoures soote," the first line to the *Prologue to the Canterbury Tales* (Chapter 8). Chaucer wrote other things, too. He was interested in ciphers. He made up his own cipher alphabet. It's used in the cryptogram above. "Cryptogram" means "secret writing." "Crypt" means "secret" and "gram" means "writing."

Another writer of the Middle Ages, Roger Bacon, an English monk, wrote in *Secret Works of Art and the Nullity of Magic* (what a title!), "A man is crazy who writes a secret in any other way than one which will conceal it from the vulgar." (The word "vulgar" refers here to ignorant people.) In this book written in the mid-1200s, Bacon listed seven ways to disguise written meaning systematically.

Are Bacon and Chaucer the only writers to work with ciphers? No, writers have always been fascinated by codes and ciphers, just as many mathematicians have. Do you recall deciphering the poem "Jabberwocky" in Chapter 12? Lewis Carroll wrote the poem, as you know, as well as *Alice's Adventures in Wonderland* and *Through the Looking Glass*. Both a writer and a mathematician, Lewis Carroll invented a cipher, which he published anonymously in 1868. Here it is (fig. 3).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
A	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	**A**
B	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	**B**
C	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	**C**
D	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	**D**
E	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	**E**
F	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	**F**
G	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	**G**
H	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	**H**
I	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	**I**
J	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	**J**
K	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	**K**
L	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	**L**
M	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	**M**
N	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	**N**
O	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	**O**
P	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	**P**
Q	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	**Q**
R	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	**R**
S	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	**S**
T	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	**T**
U	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	**U**
V	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	**V**
W	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	**W**
X	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	**X**
Y	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	**Y**
Z	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	**Z**
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	

Figure 3

The first row along the top, under the line, is the alphabet in its regular order of letters. Each row that follows is the alphabet shifted one position to the left. Therefore, the second row starts with *b* and the third with *c* and so on. The cipher does require a "key word," though. A "key word" is the word used to begin enciphering or deciphering a cipher message—it helps *unlock* the mystery. Lewis Carroll, in his explanation of the cipher, used the word VIGILANCE to illustrate the cipher method with the message MEET ME ON TUESDAY EVENING AT SEVEN. The key word is written above the message, repeated as often as necessary.

V I G I L A N C E V I G I L A N C E V I G I L A N C E V I

M E E T M E O N T U E S D A Y E V E N I N G A T S E V E N

The first letter of the enciphered message becomes *V* because it is above the first letter of the actual message, *M*. So you go to the column of the cipher grid (called a "matrix") under *V*. Then you move down the *V* column until you come to the row marked *M* (capital *M* outside the lines on both the right and left side). The letter here at the meeting of column *V* and row *M* is *h*. So *h* is the first letter of the cryptogram.

Try the second letter. The second letter of the message is *E*. The letter above it in the key word VIGILANCE is *I*. So go to column *I*. Then down to row *E*. The letter there is *m*.

EXERCISE 14.1

Can you encipher the first three words, MEET ME ON, in Lewis Carroll's cipher? •

My response to Exercise 14.1

The first three words MEET ME ON become hmkb xe bp.

The entire message MEET ME ON TUESDAY EVENING AT SEVEN is hmkb xe bp xpmylly rxiiqto lt fgzzv.

How would someone decipher this? Without knowing the key word and the idea behind the cipher matrix, I don't know how someone would begin to decipher the message.

Writers have not only invented ciphers and codes, they have put them in their books. In 1852, Thackeray put a cipher in his novel *The History of Henry Esmond*. Jules Verne began *Voyage to the Center of the Earth* with a three-step cryptogram. Rudyard Kipling put a cipher in "The First Letter," one of the stories in the *Just So Stories* for children. Here is Kipling's own drawing (fig. 4).

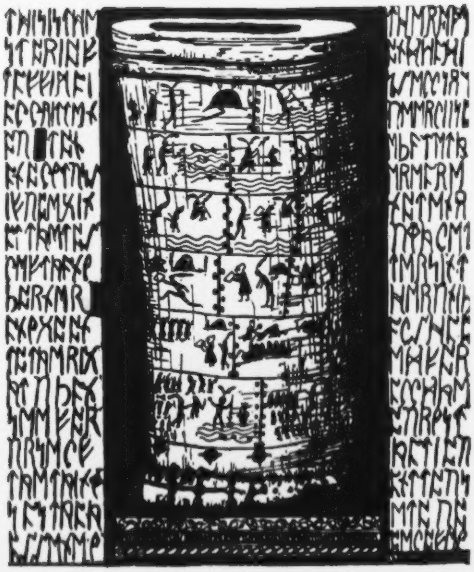


Figure 4

Kipling says that the strange signs are magic letters, but they are a substitution cipher spelling out THIS IS THE STORY OF TAFFIMAI, ALL WRITTEN OUT ON AN OLD TUSK.

Deciphering work is like detective work; you have to figure out the scheme and then work through the details. So detective stories are a natural place for codes and ciphers to appear. And the great detective hero is a master of cryptanalysis, of course. Figure 5 shows a cryptogram in *The Adventures of Sherlock Holmes* by Sir Arthur Conan Doyle.

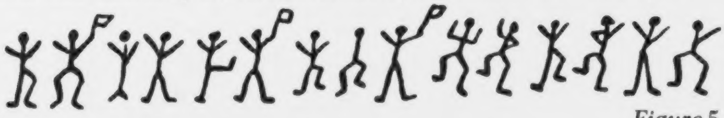


Figure 5

Here is the passage from the book about this "Dancing Man" cipher:

> "Why, Holmes, it is a child's drawing," cried Dr. John Watson when he first saw the above figures penciled on a page torn from a notebook. But Sherlock Holmes recognized it immediately as a substitution cipher. The message is AM HERE ABE SLANEY. The little flags mark the end of words.
>
> "I am fairly familiar with all forms of secret writing," Holmes declared, "and am myself the author of a trifling monograph upon the subject, in which I analyze one hundred and sixty separate ciphers. . ."

Have you ever heard the expression "Who knows what evil lurks in the hearts of men? The Shadow knows"? The Shadow was a mysterious, crime-fighting hero of a popular comic strip in the 1930s, which later became a radio show. Created by Maxwell Grant — pseudonym (false name) for Walter Gibson — the Shadow was ingenious with ciphers. Look at figure 6 for one from the story "The Chain of Death."

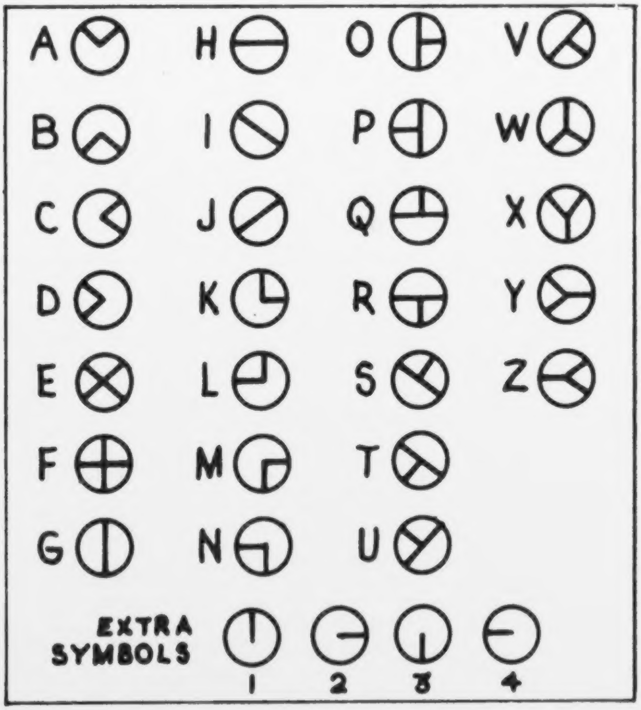
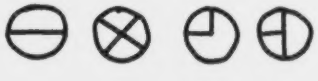
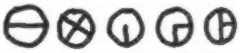


Figure 6

Do you see the four "extra symbols" at the bottom? Do you see how each one is pointing differently? Inserting an extra symbol in a cryptogram means that the reader is to turn the cryptogram in that direction to continue reading. An extra symbol may be inserted anywhere. For example, the word "help" would read



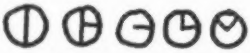
Right? Now let's put an extra symbol in the middle. Let's put extra symbol #3 between the *e* and the *l*. When we do, the letters that come after the extra symbol are changed in position. Extra symbol #3, with its line pointing down, means that the next letters are to be turned downward, which is half way around the circle. "Help" would then read



EXERCISE 14.2

Can you encipher the word GOLD in this cipher and insert an extra symbol half way through and change the last two letters accordingly? •

My response to Exercise 14.2



This is GOLD with the extra symbol #2, which calls for a quarter turn clockwise.

In the modern novel *Darkness at Noon* by Arthur Koestler, the story opens with the main character Rubashov being imprisoned. Rubashov hears a tapping on the wall of the cell next to him. The tapping goes 2, pause, 5, long pause, 3, pause, 2, long pause, 4, pause, 3. Rubashov guesses that this is a message. 2-5 3-2 4-3. What does it mean? The way the numbers are paired up may give you a hint about the cipher. Write the numbers one through five down the left column. Then write the same numbers, one through five, along the top, from left to right. Then, beginning in the upper lefthand space, write the alphabet down the first column, then the second column, and so on. With 25 spaces you have to leave out one letter because the alphabet contains 26 letters. I will leave out the letter J.

EXERCISE 14.3

Can you make this cipher? •

My response to Exercise 14.3

Here is the cipher, following the instructions above:

	1	2	3	4	5
1	A	F	L	Q	V
2	B	G	M	R	W
3	C	H	N	S	X
4	D	I	O	T	Y
5	E	K	P	U	Z

Each letter has a pair of numbers. The first number is the one from the lefthand column. The second number is from the series across the top. For example, the pair of numbers for *R* is 2-4. The pair of numbers for *K* is 5-2. The pair of numbers for *Y* is 4-5. This cipher is called the "Checkerboard Cipher." It is also called the "quadratic alphabet." Now let's see if we can decipher the message sent to Rubashov through the wall of his cell.

EXERCISE 14.4
Can you figure out the message 2-5 3-2 4-3? •

My response to Exercise 14.4
The message spells out W-H-O.

EXERCISE 14.5
If you wanted to reply with only your first name, what would you tap on the cell wall? •

My response to Exercise 14.5
I would tap out 5-3 5-1 4-4 5-1 2-4 to spell P-E-T-E-R.

Speaking of tapping: do you know how tap dancing began? In 1746 there was a slave rebellion in the Carolinas. The Blacks used drums to call each other to march. When the rebellion was put down, a law was enacted making it illegal for Blacks to play drums. So the Blacks cleverly used foot tapping as a secret way of communicating, and this evolved into tap dancing.

Codes and ciphers appear frequently in literature, from the short stories of O. Henry to the mysteries of Agatha Christie. Perhaps you could think up a story that revolves around figuring out a secret message. The writer who made this popular is Edgar Allan Poe. His most famous story of this kind is "The Gold Bug." Do you know it? An amateur naturalist sketches a gold-colored bug on a piece of parchment and, in showing it to his friend, holds it near a fire, which reveals a death's-head on the parchment. Intrigued, he searches more. A cryptogram (secret message). The story involves his deciphering the cryptogram and finding a pirate's treasure. Here is the cryptogram.

```
53‡‡†305))6*;4826)4‡.
)4‡);806*;48†8¶60))85
;I‡(;:‡*8†83(88)5*†;46
(;88*96?;8)‡(;485);5
*†2:*‡(;4956*2(5*-4)8¶
8*;4069285);)6‡‡;I
(‡9;48081;8:‡I;48‡85
;4)485†528806*8I(‡9;48
;(88;4(‡?34;48)4‡;I6I
;:I88;‡?;
```

The cryptogram, a substitution cipher in invisible ink written without word divisions by the pirate Captain Kidd, says

> A good glass in the bishop's hostel in the devil's seat—forty-one degrees and thirteen minutes—northeast by north—main branch seventh limb east side —shoot from the left eye of the death's-head—a beeline from the tree through the shot fifty feet out.

Poe, one of the first outstanding American writers, deserves recognition as the person who popularized cryptology (the study of secret writing) in the United States, not only for his stories but for the challenge he gave the public to send him any cryptogram to solve. He sent out this challenge in 1839 through the newspaper for which he worked, *Alexander's Weekly Messenger* in Philadelphia. The newspaper was swamped with mail. Poe solved one cryptogram after another—and never revealed how he did it. Once he said he would tell, then said he wouldn't. Better for business I guess. Poe became famous as a cryptologist. He claimed, "It may be roundly asserted that human ingenuity cannot concoct a cipher which human ingenuity cannot resolve." So far Poe has not been proven wrong.

Do you keep a diary? If so, is it secret? If you don't keep a diary or journal, do you think you might some day? Since a diary is the most personal kind of writing, the question naturally arises as to how private you want to keep it. Sure, you can hide it, but an even safer means is, of course, secret writing.

EXERCISE 14.6

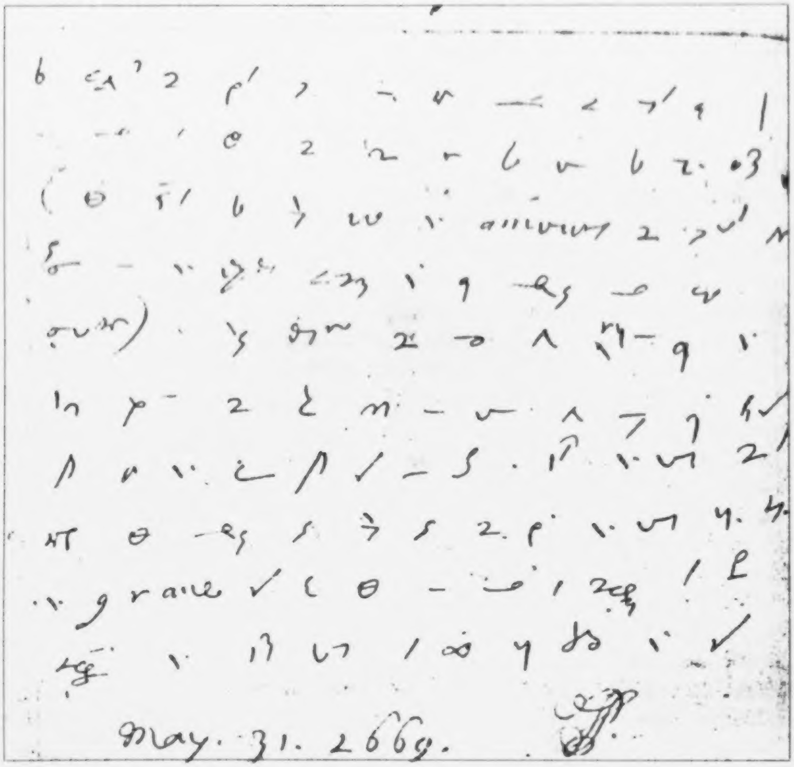
Assuming you kept a diary, would you use secret writing? •

My response to Exercise 14.6

I don't keep a diary, but if I did, I would write only parts in secret writing, because it would take so long to write it all in code or cipher. But I would encipher random passages at the beginning so that if someone found it and read it and deciphered the early, enciphered passages, he or she would not assume that later enciphered passages were particularly personal, or should I say juicy? Pretty clever, huh? Probably not.

Do you think there is such a thing as the most famous secret diary, among those that have been found and deciphered? Well, there is. At least in literature, and there is proof: the diary of Samuel Pepys, published in 1825, has been in print ever since. The diary is included in many literature and English history courses.

The diary was written long before it was published. Samuel Pepys kept his diary from 1660 to 1669, writing 3,000 pages in shorthand. Shorthand had just been invented, so only a few people knew about it. Besides, Pepys told only a few people that he was writing a diary. At his death, the diary stayed at Magdalene College in England for about 20



May. 31. 1669.

Figure 7

years, untouched. Then the master of the college, who had known Pepys, decided to look at it for what it might add to contemporary English naval history, for Pepys had held positions in the Navy. The college master couldn't read it, so he gave it to someone who might be able to, who struggled with a few pages, and handed it on to an undergraduate at another college. The young man spent about 12 hours a day for three years, deciphering the entire diary.

Figure 7 is a page from the diary written in shorthand. The value turned out not to be for naval history but for the intimate portrait of an interesting person.

Perhaps the most bizarre tale of writing and cryptology is a story of someone trying to prove that the alleged writer did not in fact write the works attributed to him. How does one try to do this from looking only at the work itself? One would look for some sign of the actual writer giving away his identity in the book itself.

There is a single, most famous effort of cryptological detective work to prove that the works attributed to one man were actually written by another, under a pseudonym. And the reason for this fame is partly due to the writer. Which writer in the English language would attract the most attention for such a claim? The most famous writer in English, naturally — William Shakespeare. Wouldn't it be something to prove that Shakespeare was not Shakespeare after all, but someone else? Here is a passage from a diary written in 1882, here in the United States:

> "I have been working . . . at what I think is a great discovery I have made, to wit: a cypher in Shakespeare's plays . . . asserting Francis Bacon's authorship of all plays . . . I am certain there is a cypher there, and I think I have the key; all this cannot be accident."

("Cypher" is an earlier spelling of "cipher.") The writer is Ignatius Donnelly, a colorful American political figure from Minnesota who served in the House of Representatives. Voted out of office in 1878, Donnelly turned to writing about his two pet theories: the existence of Atlantis and the catastrophic prehistoric collision of the earth with a comet. In 1882 appeared his book on Atlantis in which he asserted that the lost continent existed and was the actual Garden of Eden! The book was immensely popular, and the next year his collision-theory book appeared.

Prior to these publications, Donnelly had heard of the idea that the plays of Shakespeare had actually been written by Francis Bacon, a contemporary of Shakespeare's. Donnelly began reading the plays, looking for clues, looking especially for possible ciphers of the name Francis Bacon. Thus began his great ambition, *The Great Cryptogram*. Figure 8 is

computations	*word number*	*page and column*	*plaintext*
$516-167 = 349-22b \,\&\, h = 327-30 = 297-254 = 43-15b \,\&\, h = 28$	28	75:2	Shak'st
$516-167 = 349-22b \,\&\, h = 327-248 = 79.$ $193-79 = 114+1 = 115+b \,\&\, h = (121)$	(121)	75:1	spur
$516-167-349-22b \,\&\, h = 327-254 = 73-15b \,\&\, h = 58.$ $498-58 = 440+1 = 441$	441	76:1	never

Figure 8

an example of the computations for his book. As impressive as these figures may appear, Donnelly did not take the time, unfortunately, to explain them fully. Maybe that tells you something. The book flopped. It didn't sell. Worse, cryptologists made mince meat of Donnelly's "proofs."

Undaunted, Donnelly went to Europe to lecture on his cause. He even wrote another book on the subject. It went nowhere, and in the next year, as a vice-presidential nominee, Donnelly went down to resounding defeat in McKinley's election.

There are some twists to this story. As soundly as Donnelly's argument was refuted, the idea that Shakespeare is a pseudonym has not died out. Perhaps this says more about how wonderfully nutty people are and how famous Shakespeare really is than about how credible Donnelly's idea is.

CHAPTER 15

Numbers and Pictures

In the last chapter we saw ciphers and codes made out of all sorts of things. Lewis Carroll's was made out of the letters of the alphabet. Arthur Koestler's "checkerboard cipher" was made out of numbers. The "Dancing Man" and the Shadow's cipher in "The Chain of Death" were made out of pictures. Later we're going to be looking at a special message sent in numbers and pictures.

But are numbers a language? Do they have the conventions of language we identified earlier?

- A series of basic elements? Yes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 are the basic elements that all numbers are made of.
- Spacing? Yes. A space in the middle of the number 46 makes it 4 and 6.
- Direction? Of course: 96 is not the same as 69.
- Sequencing? Yes, for subtraction and division anyway. The sequencing of, say, 8-5 and 12 ÷ 3 is important. In addition and multiplication, though, the sequencing can go in either direction: 5 + 4 is just as good as 4 + 5; likewise 7 × 6 and 6 × 7.
- Signaling devices? Yes. The +, -, ÷, ×, and = are like punctuation, telling us how to treat the material next to them.

But what about pictures? Can we talk about pictures as language? Are pictures a system of meaning too?

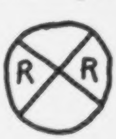
We have seen how pictures can be used in making ciphers. The "Dancing Man" cipher and the Shadow's cipher in the story "The Chain of Death" are examples we saw in the previous chapter. So if a cipher can be made out of a picture, why not a clear language system? Let's look around us. Is there a picture language that we see every day if we live in a town or a city? How about traffic signs?

EXERCISE 15.1
Do traffic signs use pictures to express their meaning? •

My response to Exercise 15.1
Yes, some traffic signs are pictures or partly pictures.

Some traffic signs are just words. Can you think of one? "STOP" is always spelled out as a word. How about numbers? Some traffic signs are just numbers — for instance, to indicate a change in speed limit. And some traffic signs are combinations of letters and pictures.

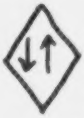
EXERCISE 15.2
Do you happen to know the meaning of this sign? •

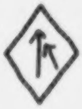


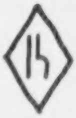
My response to Exercise 15.2
This sign means "railroad crossing."

Some signs are just pictures.

EXERCISE 15.3
Do you know what these signs mean?







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My response to Exercise 15.3
The first sign means "two-way traffic." The second means "merge from the right." The third means "pavement narrows."

None of these three signs uses either words or numbers. Do you think that these signs are as easily understood as word signs or number signs? Perhaps not. But just because a sign uses letters, that doesn't mean it is clear to everybody. For example, do you know the meaning of PED XING? It means "pedestrian crossing." Can you imagine someone saying, "I'll meet you at the ped xing"? And what about the sign SLOW CHILDREN? Do you think that this sign works well? I mean, is it clear?

I don't think so. It is meant to convey the message "Drive slowly, look out for children" or "Go slow, children nearby." But it doesn't say that. By reducing the words to just two, "slow" and "children," the meaning is unclear. I think it could be improved by substituting a picture of children for the two words.

Do you have a favorite sign? My favorite is for "Deer in the area." Have you seen it? The sign is just a picture of a deer leaping. I would like to see one for bears. Then again, maybe I wouldn't. I wonder if there is one somewhere for elephants.

Think of traffic signs and traffic signals. Do they form a language? What do you think? They do form a system whereby drivers and pedestrians are told what they may do and what to be on the alert for. Would you call this system a language? Maybe a language must do more than convey information.

A kind of picture that is like a sign is called a "symbol". Here are three symbols.

EXERCISE 15.4

Do you happen to know what these three symbols mean—or, I should say, stand for? •

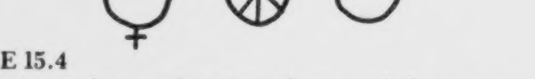
My response to Exercise 15.4

The first sign stands for woman. The second for peace. The third for man.

What is the difference between a sign and a symbol? A sign is meant to convey a piece of specific information. Symbols don't deal with information. A symbol stands for an idea. The meaning of a symbol is larger and more general than the meaning of a sign.

To have a language of symbols we would need a lot of them so that we could move them around to cover a large range of meaning. In other words, we would need a *system* of symbols just as we have a system of traffic signs and signals to cover all driving situations.

Let's look at another group of marks that look like signs and symbols.



EXERCISE 15.5

Does this series look like a good candidate for a pictorial language? •

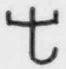
My response to Exercise 15.5

This series looks like a pretty good possibility for a pictorial language because some of its parts look as if they could be pictures of something. That's the point. Do they or do they not look like pictures of something? If you think that they look more like numbers or letters than they look like pictures of something, then you would *not* call this series a good candidate for a pictorial language.

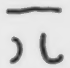
But what if some look like pictures and some look like letters or numbers? Well, that's a problem. But just because something looks like a letter or number doesn't mean it can't be a picture of something, right? So then the question is, what does the thing represent?

Do you happen to know what these figures are? You are not likely to know unless you are familiar with cattle raising. These figures are cattle brands.

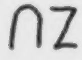
Brands have names as well as owners. Here are the three brands and their names:



Pitchfork J



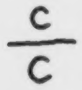
Bar 96

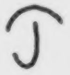


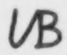
Open AZ

EXERCISE 15.6

Take a guess at the names of the three brands below. •







My response to Exercise 15.6

I will give it a try. The first might be called the Double C. The second might be called the Fancy J. And the third might be called the Horseshoe B.

The real names of these three brands, it turns out, are the C Bar C, the Quarter Circle J, and the Lazy SB. I like my names better. How about you? Do you like your names better than the real ones?

I also like the combination of the brand and the name.

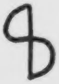
EXERCISE 15.7

Pick any one of the last six brands and explain the connection between the brand and the name. •

My response to Exercise 15.7
I will pick the Lazy SB. The *S* is turned a little on its side, and leaning against the *B* as if it's "lazy." The *B* is clearly a *B*.

EXERCISE 15.8
If you had a ranch, what would you name it, and what would its brand look like? •

My response to Exercise 15.8
Maybe I'd call it the Hidden PS. The brand would look like this:



Cattle brands are not a pictorial language. They are a pictorial system of meaning, like traffic signs, but they are not a language. That doesn't mean that we couldn't use them to invent a pictorial language. (To do so, though, we might choose to use those brands that look the least like numbers or letters.)

We've already talked about a real pictorial language, way back in chapter 3. Chinese is a pictorial language. It began with pictures representing ideas. These pictures are called "characters." Each character has a meaning. Then there are ways to vary the meaning of a character. Here is an example. This is the character for "man."

人

"Big" comes from "man." "Big" is "man" with a horizontal line through the top, like a man with his arms stretched out, as if to say, "That fish was *this* big."

大

Add a horizontal line above "big" and you get "heaven":

天

It's as if "big" plus "above" equals "heaven."

You begin with a character, and then you make additions to the character to develop other, new meanings. This is a good way to develop a pictorial language, don't you think?

Once you are told the meaning of the three characters as "man," "big," and "heaven," you can see the progression. The change from one character to another makes sense. That doesn't mean, though, that every Chinese character visually resembles its meaning. Anyway, how would you draw heaven with a few lines? But the base character—the one for "man"—possesses more of a visual resemblance to its meaning than the other two do.

To get a feel for this way of developing new meanings by making certain additions to a character, let's take these three characters and assign our own meanings.

EXERCISE 15.9

Can you make up a sequence of three new meanings for the three characters 人 大 天 ? •

My response to Exercise 15.9

Here is my sequence of three meanings for these characters.

人	大	天
walking	work	generous

My guess is that your sequence of three meanings is different from mine, and perhaps considerably different. I say that because we all have our own associations with pictures. By that I mean that simple, line pictures such as these can easily suggest different things to different people.

It is pretty easy, I think, for each of us to look at a simple line drawing and make an association with an idea. It is also pretty easy to begin with an idea and make a simple, line drawing to represent it. What is hard, though, is to make a simple, line drawing and give it a meaning that will be recognizable by everyone else. The other hard thing to do in pictorial languages is to make drawings for abstract ideas.

Ancient Chinese is clearer to us than modern Chinese because Ancient Chinese is closer to simple pictures. Figure 9 gives some examples.

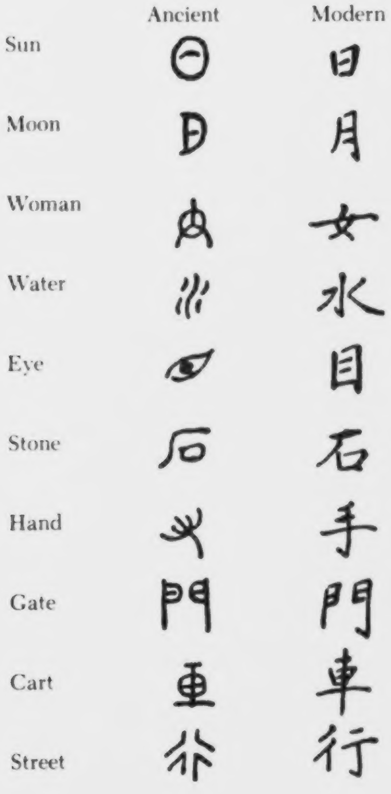


Figure 9

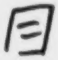
Aren't the ancient characters easier to recognize than the modern ones? Why didn't the Chinese people keep the ancient characters? Language, like everything else, goes through changes. Once the ancient characters were established and everyone knew them, then they weren't just pictures anymore. The characters became Chinese writing. So they changed just as our own writing changes from the time we are little kids in school learning how to write to the time when we are adults. Do you remember how you wrote your name when you first learned to write? You sign

]

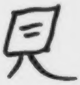
your name differently now, don't you? Well, that is natural change. Your writing evolves, changes, over time. A language does the same.

A language evolves not only in the way it looks but also in the way it makes meanings. We mentioned before the problem of making a character for an abstract meaning. It isn't hard to make a character for a concrete thing, like man, but what do we do to represent "love" or "freedom?" These are abstractions.

The Chinese have a wonderful method for representing ideas. Here is an example. Perhaps you can figure it out before being told. You know the character for "man," right? Here is the character for "eye":



Here is the combination of the characters for "man" and "eye":



EXERCISE 15.10
What do you think this combined character means? •

My response to Exercise 15.10
Perhaps "man" and "eye" mean "look."

That's close. Actually, the two characters together mean "see." (The point is not really what the answer is because the answer is just a guess.) The point is that the Chinese *combined* characters to make a new meaning. This method is much like our combining words to make a new word, such as combining "basket" and "ball" to make "basketball." Here are two other combined or two-part characters.

Tree 木 and tree 木 together mean "forest" 林
Tree 木 and sun 日 together mean "east" 東 (sun rising in tree)

I like these combinations. They tell me something about how the Chinese people think. And you may have already figured out that two-part characters aren't the only additional way the Chinese people developed new characters for new meanings. They also developed three-part and four-part characters.

Chinese differs from English not only in being a pictorial language (instead of an alphabetical language) but also in the way it applies the other conventions. Most noticeable to us is the direction. Classical Chinese is written not across the page, but down the page, and you begin reading at the far right-hand column, not the far left-hand side as we do in English. The convention of direction is applied in Chinese in almost directly the opposite way as it is applied in English. The front of a Chinese book is where we would normally go to find the back of a book in English. This makes sense when you realize that in Chinese you are reading the columns from right to left, instead of from left to right.

A pictorial language that you may have come across in your studies of ancient civilizations is Egyptian. The ancient Egyptian civilization was one of the greatest the world has known, and the language of this civilization began as pictorial. The pictorial element in ancient Egyptian is the hieroglyph ("sacred carvings," because in ancient Egypt writing was the exclusive right of the priests) and the system of writing is called "hieroglyphics."

What is particularly interesting about Egyptian hieroglyphics is that what began as pictures also developed into an alphabet. That may sound strange. Chinese and other Asian pictorial languages did not develop into an alphabetical language. The Egyptians had a reason, though, to make a connection between the hieroglyphs and particular sounds. Figure 10 shows the classical Egyptian alphabet, used in ancient Egypt for 3,000 years.

The sounds, as you can see, correspond to the sounds of many of the letters of our alphabet. (Some experts believe that the formation of our alphabet goes back all the way to the Egyptians.) Some of our letters are not present in the Egyptian alphabet, and some of their sounds cannot be represented by one letter of our alphabet. As you study other languages, you will find that there are sounds that are hard to represent with the letters of our alphabet because the sound is not common to English. But the sounds are not what is most noticeable to us about the classical Egyptian language. Instead, it's the fact that the sound is represented by a picture of a thing or a creature. At the same time, these symbols can also stand for whole words!

Letters of our alphabet may have had a pictorial source, way, way

Classical Egyptian Alphabet

HIEROGLYPH	OBJECT DEPICTED	SOUND
𓄿	vulture	a
𓃀	foot	b
𓐍	placenta	ch
𓂧	hand	d
𓂝	arm	e
𓆑	horned viper	f
𓎼	jar stand	g
𓎛	twisted flax	h
𓇋	reed leaf	i
𓆓	snake	j (dj)
𓎡	basket	k
𓅓	owl	m
𓈖	water	n
𓊪	mat	p
𓈎	hill	q
𓂋	mouth	r
𓋴	folded cloth	s
𓈙	pool of water	sh
𓏏	loaf of bread	t
𓍿	tethering ring	tch
𓅱	quail chick	u or w
𓇌	two reed leaves	y
𓊃	door bolt	z

Figure 10

back in time. But we don't think of them as pictorial. We think of them as being only letters, namely something visual that stands for a sound.

EXERCISE 15.11

Can you write your name in classical Egyptian? (If a letter in your name is missing in the classical Egyptian language, then you simply leave it out.) •

My response to Exercise 15.11

Here is my name (Peter) in classical Egyptian.

𓊪 𓂝 𓏏 𓂝 𓂋

Egyptian hieroglyphic writing could be written in *either* direction—left to right or right to left—*and* in vertical columns. Talk about an open approach to the convention of direction! But wouldn't this freedom cause all sorts of problems? I can't see how it wouldn't. I wonder how long it took for people to read a short passage.

Hieroglyphic writing wasn't deciphered by Europeans until the discovery of the Rosetta Stone, a rock with glyphs in three languages—all saying the same thing.

Just as Chinese developed from its ancient characters to its modern characters, so did Egyptian. Hieroglyphics are pictures of ideas. They take some time to draw. A practical question about a language is how rapidly a person can write it. Simple marks can be done more quickly than pictures. So, for the purpose of speed, Egyptian hieroglyphic writing changed. It became simpler. This means that it became less pictorial too.

The second stage of Egyptian writing is called "hieratic." It is about half way between hieroglyphics and the final stage, called "demotic." You can see in figure 11 that some of the hieroglyphs changed so much that their pictorial origin vanished.

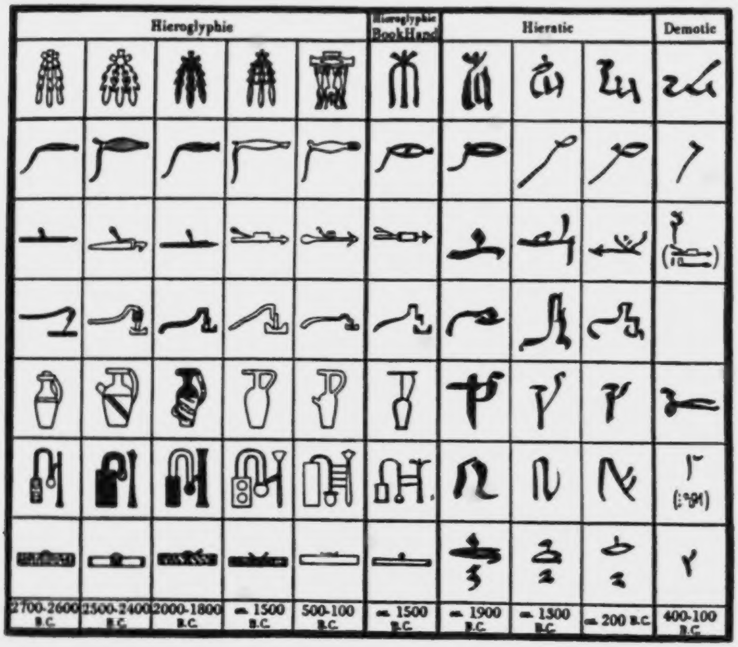

Hieroglyphic
Hieroglyphic BookHand
Hieratic
Demotic
2700-2600 B.C.
2500-2400 B.C.
2000-1800 B.C.
– 1500 B.C.
500-100 B.C.
– 1500 B.C.
– 1900 B.C.
– 1300 B.C.
– 200 B.C.
400-100 B.C.

Figure 11

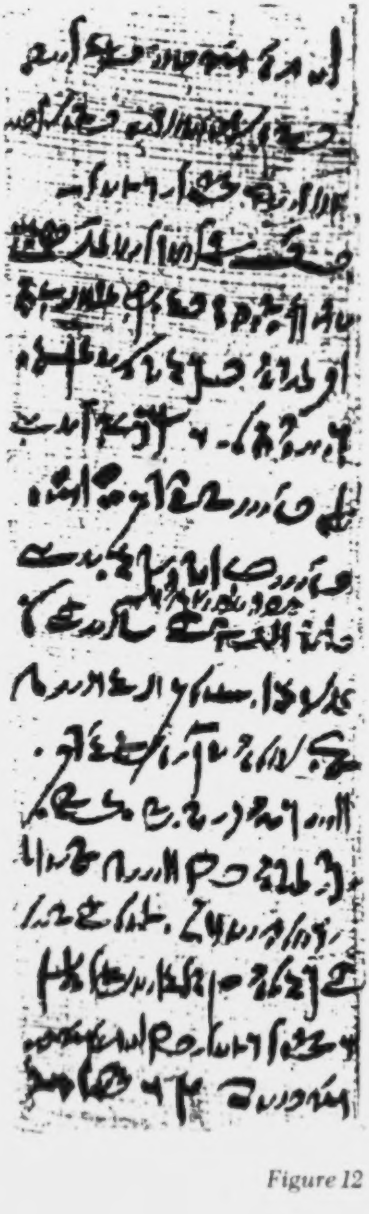


Figure 12

You might have expected only three columns, one for hieroglyph, one for hieratic, and one for demotic. There are more columns because in the first two stages of Egyptian writing there was more than one way to make the figure. The first stage—hieroglypics—was the most elaborate. There are five columns here for five different ways to make the hieroglyph.

EXERCISE 15.12

What do you make of the fact that there are five columns for hieroglyphics, three for hieratic, and one for demotic, and one for hieroglyphic book hand? •

My response to Exercise 15.12

The decreasing number of columns suggests that the Egyptians gradually simplified their language, probably for practical reasons.

In figure 12 is a passage of demotic writing from 270 B.C.

The demotic ("of the people") form came about partly because of the invention of papyrus (the ancestor of paper) and the use of a brush and ink to write with. No longer did words have to be carved in stone. Handwriting was of course quicker and more fluid than carving.

CHAPTER 16

Paintings, Petroglyphs, and Comics

It is easy to forget that written languages can look beautiful. We call the art of beautiful handwriting "calligraphy," an art form taught, for example, in art school and college. Students learn how to make the letters of different alphabets, ancient and modern, as well as the characters and figures of pictorial languages.

That we regard writing as something that can be done artistically may go all the way back to our prehistoric ancestors, who drew and cut pictures and designs on the walls of the caves they lived in, long before there was any kind of writing, much less writing that was systematic enough to be called a language.

The caves most famous for their prehistoric wall paintings are in France, but I would like to show you other cave paintings (figs. 13, 14, 15), from caves in the Sahara Desert.

The Sahara Desert may not seem like a probable place to find prehistoric cave paintings, but 8,000 years ago the land was laced with rivers and plentiful with wildlife. These caves, called Tassili-n-Ajjer, contain at least 800 paintings. The caves are regarded by some experts as the greatest natural museum of prehistoric painting in the world.

You don't have to go half way around the world to find ancient paintings and petroglyphs (stone carvings). Right here in the United States the prehistoric peoples who preceded the native American Indians left their art carved and painted on smooth rock faces, caves, and boulders. Figure 16 shows one of Bighorn sheep in Monument Valley, Arizona. Many Indian paintings and petroglyphs are, like this one, realistic. But not all were: figure 17 shows an old Indian painting done by the Chumash Indians in southern California.

The fact that this painting appears to be a hodgepodge of images and symbols suggests that it was not meant to tell a specific story or convey information. But what does it mean? Some researchers believe that

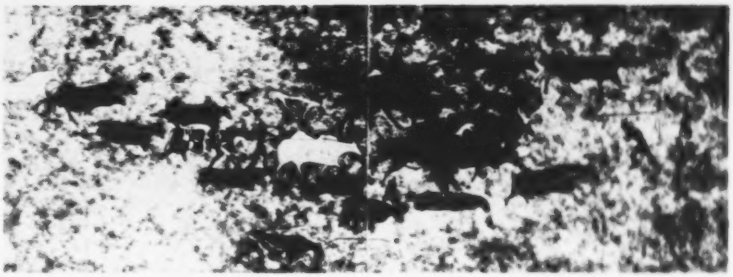


Figure 13

Figure 14

Figure 15

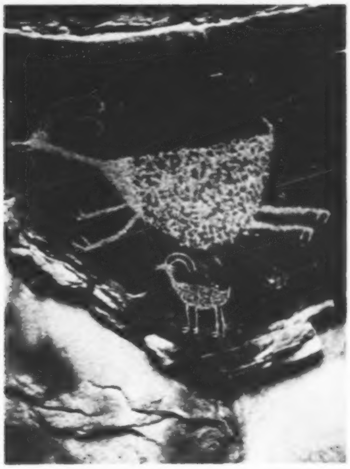


Figure 16

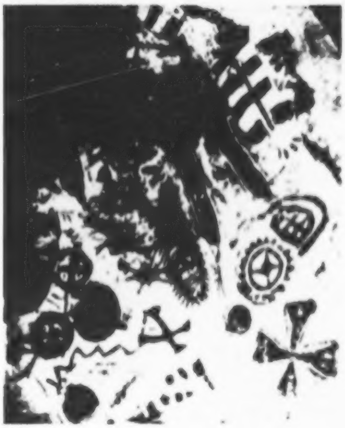


Figure 17

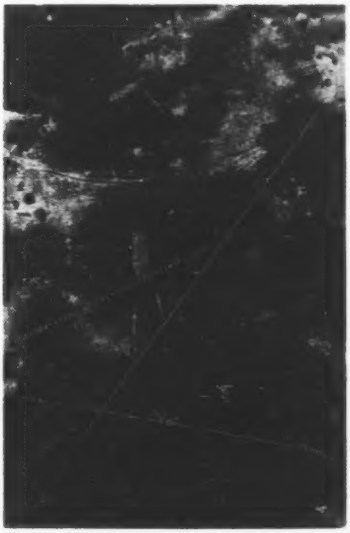


Figure 18

much Indian rock art was not intended to be organized or narrative or informative, but was meant to do only one thing: gain spiritual power by invoking through pictures the spirits of sacred animals. How else would you try to explain the 170-foot-long figure (fig. 18) cut into the desert gravel near Blythe, California? Such an immense figure, fully visible only from high above the desert, must have been intended for a special purpose. But what?

EXERCISE 16.1

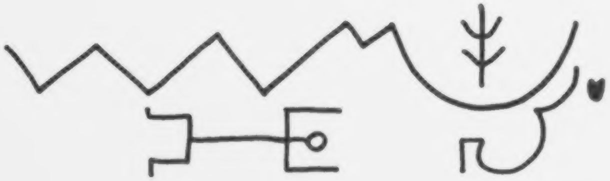
What do you think? Nobody knows, so your idea is as good as anyone else's. •

My response to Exercise 16.1

I have no idea, other than the spiritual power theory. Strange and fascinating paintings and petroglyphs exist throughout the country, and their varying ages show that for centuries the ancient people of this land made such images for reasons other than telling stories.

How important this art was becomes clear when we realize that these peoples had no written language. They expressed themselves in storytelling, music, and dance, but rock art was their only fixed, permanent means of expression. It was the closest thing they had to written language.

Once the people are able to read this kind of pictorial shorthand—once they understand its conventions, much like the conventions of written language—an artist can convey much meaning in a fairly simple drawing. Would such a drawing be realistic? Perhaps. Perhaps not. It might be a mixture of realistic and abstract parts. However it is done, its meaning will extend way beyond what the painting appears to be. Here is an example:



EXERCISE 16.2

Do you recognize any parts of this drawing? •

My response to Exercise 16.2

There is a human figure on its side and, above it, what looks like mountains or water, and, to the right, a tree.

These parts of the drawing seem fairly clear. But what about the other parts? They don't look like anything, do they? And what does the whole drawing mean?

In *Book of the Hopi*, Frank Waters explains:

> The old chief Salavi is pictured horizontally to show that he has passed away. The jagged line above him denotes water, which ends in a spring to the right, and out of this grows the spruce tree into which he transformed himself at death. The arms or branches of the spruce are upraised because the spruce is holy, the most magnetic of all trees, its branches forming a throne for the clouds to rest upon. The symbol below represents Salavi's lifeline; it rises at birth from Mother Earth, extends horizontally at ground surface during his life span, sinks down at death, and then comes back in spirit form into the roots of the spruce directly above. The footprint is the mark of the people on their migration.

This is a wonderful explanation of the meaning of the drawing. It is actually a story, and looking back and forth from the explanation to the drawing is interesting. But to figure out the meaning without the explanation would be impossible. Without intimate knowledge of Hopi culture, this drawing remains indecipherable.

At least it's *one* drawing. Imagine if it weren't clear that a group of pictorial elements were meant to be viewed as parts of a whole. For example, figure 19 shows another Hopi drawing. Three pictorial elements with no evident connection to one another form this one picture. It could just as well be three separate parts of a code or ciphers.

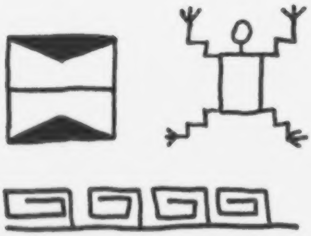


Figure 19

EXERCISE 16.3

How much of this drawing is recognizable to you? •

My response to Exercise 16.3
Only one element, the human figure, is recognizable to me. The other two look like abstract designs.

The other two elements do appear to be abstract designs, but, according to Frank Waters, they aren't. The element in the upper left is a cloud reflected in water below, and the row of repeating patterns along the bottom is four waves of water. So each of these is a stylized, abstract drawing of something real. But this is just the beginning of the problem. Just because these two abstract-looking parts come from something real, that doesn't mean they are there just to represent real things. Instead, they may be symbolic. In other words, in the drawing they may stand for something else.

This is precisely what they do in this drawing. The four waves represent "the four migration routes to be completed by the Water Clan." That is symbolic.

This kind of drawing deserves its own term. Perhaps "symbolic pictures" is a sensible name because even though these pictures contain realistic parts, each part of the picture, realistic or abstract, stands for something else. In other words, each part is symbolic. This greater complexity means more of a problem to us in trying to figure out its meaning. But what about looking at this difficulty in the opposite way? Couldn't this greater complexity mean greater richness in meaning?

Do you think these symbolic drawings resemble a language? In some ways they do, and although I think of these drawings as being as powerful to the Hopi as our language is to us, I wouldn't call them "writing," because there is one important difference between drawings and written languages: the third convention of language, direction. A written language must have direction, but what about a drawing?

EXERCISE 16.4
Is there direction in a symbolic drawing? Is it clear that we are supposed to start looking at a drawing in one place and then move in a certain direction to the other parts of the drawing? •

My response to Exercise 16.4
No, we do not look at a drawing this way.

No, there is no convention of direction in a drawing. In fact, part of the pleasure of looking at a drawing is looking at whatever part you want in whatever sequence you want.

This difference may be important for making a distinction between these drawings and written languages, but it is not important to the general similarity between these drawings and pictorial languages. There is, after all, a natural connection between symbolic drawings and pictorial languages (such as Chinese or classical Egyptian). And one thing is certain about symbolic drawings: they are a powerful way for a people to express themselves.

Rather than being set against one another, writing and pictures often team up in popular ways. Obviously, many books and magazine articles include drawings or photographs. Here, the writing is usually primary, the pictures secondary. In other publications, the drawing is primary and the writing is secondary.

EXERCISE 16.5
In what sort of publication is the drawing primary and the writing secondary? •

My response to Exercise 16.5
A publication in which drawing is primary and the writing is secondary is comics (fig. 20).

EXERCISE 16.6
Would you like to do the next page of the story in figure 20? Take it anywhere you want. •

I am going to leave this up to you, but I hope you give it a try, even if you don't consider yourself a great artist. I want you to see how unimportant the words might be if you are presenting action. I wouldn't be surprised if your story line were clear without any words.

Yet what is essential to the clarity of the story is the sequencing. If you couldn't sequence your drawings, you would have a much harder time telling your story. Notice in this comic page how specific the sequence is. There is no uncertainty about the sequence. And why is the sequence so clear? Because it is based on the second convention, direction. Once the direction is set, sequencing is easy to establish. The clarity of comics is based as much on the conventions of written languages as it is on the clarity of the drawings themselves.

Let's go back to the Sahara Desert one more time. In the prehistoric cave drawings some of the figures have round heads and seem to be wearing strange suits, as in figure 21.

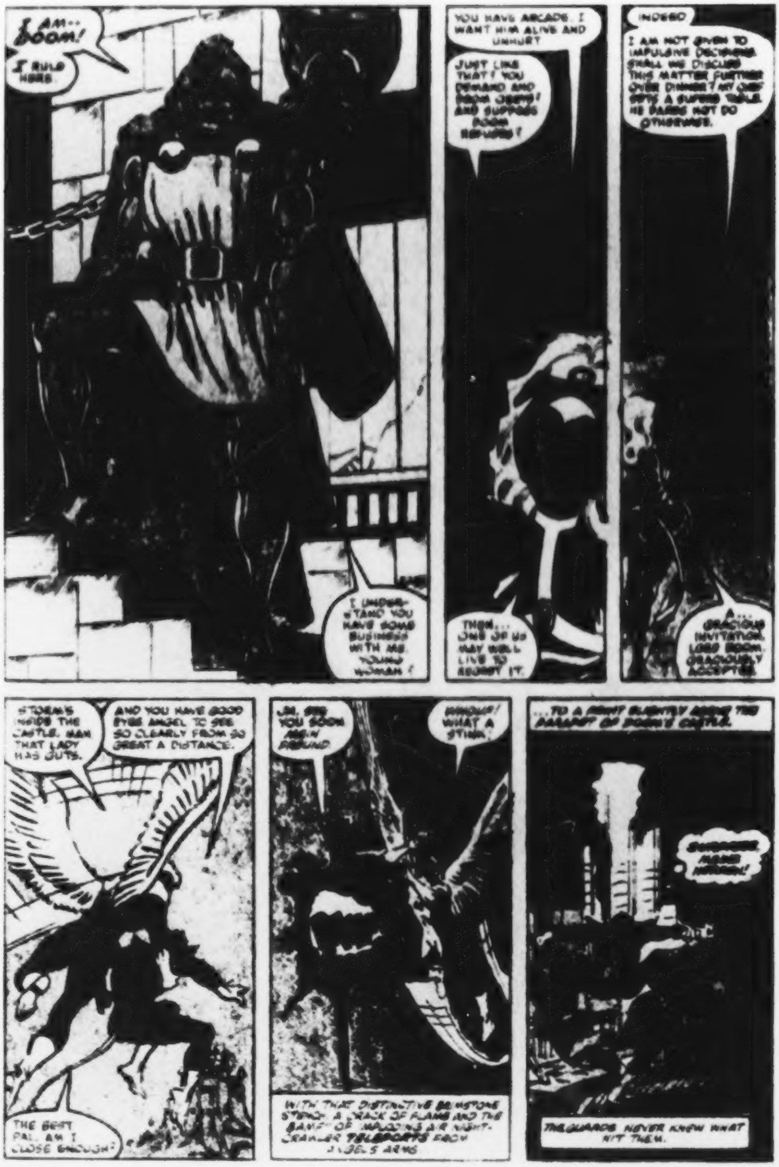

I AM... DOOM!
I RULE HERE.
I UNDERSTAND YOU HAVE SOME BUSINESS WITH ME, YOUNG WOMAN?
YOU HAVE ARCADE. I WANT HIM ALIVE AND UNHURT
JUST LIKE THAT? YOU DEMAND AND DOOM OBEYS! AND SUPPOSE DOOM REFUSES?
THEN... ONE OF US MAY WELL LIVE TO REGRET IT.
INDEED
I AM NOT GIVEN TO IMPULSIVE DECISIONS. SHALL WE DISCUSS THIS MATTER FURTHER OVER DINNER? MY CHEF SETS A SUPERB TABLE. HE DARES NOT DO OTHERWISE.
A... GRACIOUS INVITATION, LORD DOOM. GRACIOUSLY ACCEPTED.
STORM'S INSIDE THE CASTLE. MAN THAT LADY HAS GUTS.
AND YOU HAVE GOOD EYES ANGEL TO SEE SO CLEARLY FROM SO GREAT A DISTANCE.
THE BEST PAL. AM I CLOSE ENOUGH?
WHOUF! WHAT A STINK!
WITH THAT DISTINCTIVE BRIMSTONE STENCH, A CRACK OF FLAME AND THE BAMF! OF IMPLODING AIR NIGHTCRAWLER TELEPORTS FROM ANGEL'S ARMS
...TO A POINT SLIGHTLY ABOVE THE PARAPET OF DOOM'S CASTLE.
THE GUARDS NEVER KNEW WHAT HIT THEM.

Figure 20

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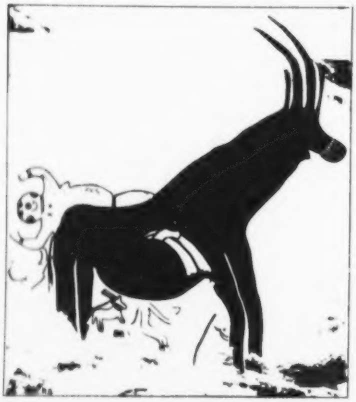


Figure 21

What does the figure on the left look like to you? People who study prehistoric drawings have not been able to agree on what this figure is supposed to be. One person has come up with an interesting theory: Erich von Daniken proposes in his book *Chariots of the Gods* that this figure, and others like it, are realistic, that they are astronauts from another planet who visited earth sometime in the prehistoric past. He shows similar pictures from the art of other prehistoric peoples to support this claim. Take another look at the prehistoric cave painting. Decide for yourself. Your thinking will launch you into the final part of this book.

CHAPTER 17

The Most Interesting Question About Language

What is the most interesting question about language? What do you think? I think that sending a message into space is the most interesting language question. What would we say? How would we say it?

Sending a message into space is the subject of these final chapters. We are going to do two things: we are going to try to decipher a message that *has* been sent into space, and we are going to make up our own message.

Figure 22 shows a picture of the first message sent into space by humans. It was first sent in 1974 from the Arecibo radio telescope in Puerto Rico. A radio telescope is not something you look through, it's more like a transmitter and receiver of electromagnetic waves, like radar. The Arecibo is the largest radio telescope in the world. The message continues to be sent.

EXERCISE 17.1
What do you make of the message? Can you decipher any of it? •

My response to Exercise 17.1
The space message is a strange-looking thing, all those little squares. If it is a code or a cipher, I have no idea how to read it. I don't know where to start. About two-thirds of the way down in the middle is something that looks like a human figure, though.

Are you having the same problems I am? Do you think that that is a human figure? If it is, the language system of the message is pictorial. But then, what are the other parts? What are they pictures of? I don't see any other pictures. Do you?

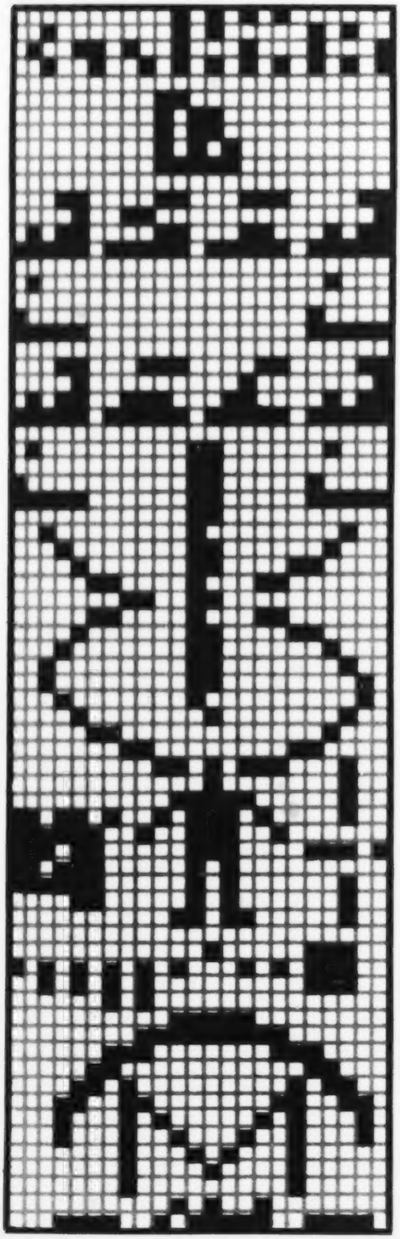


Figure 22

Maybe they are not *all* pictures. Maybe only a part of the message is pictorial. In other words, could the language system of the space message be part pictorial and part something else, maybe a code or a cipher?

EXERCISE 17.2
What do you think? Do you think the message might be part pictorial and part something else? •

My response to Exercise 17.2
I don't know. Maybe that isn't a figure at all. Nothing else in the message looks like a picture to me.

Maybe we can't get much farther this way. Let's try another approach. Let's think about what *we* would put in a message to be sent into space.

EXERCISE 17.3
What would you include in a message to be sent into space? •

My response to Exercise 17.3
I would put information about the earth and about human beings, and I would put some sort of a greeting so that the message would be taken as friendly.

Whatever we decide to include in our message, we face a hard problem: how do we represent our content? Do we use pictures? Do we use a written language like English? Do we use numbers? Do we use something else? It depends on what we want to say, I suppose. Think about what you want to say. Then think about how you are going to say it.

Can you say it with pictures? If you can, you can send a message that is totally pictorial.

If you can't say it with just pictures, then you have to figure out how to express it. To put this another way, if your message is to include words, you have to think about how to make words understandable to intelligent life in space.

The same would be true if you want to include numbers in your message: you would have to include some way for the numbers to be understood, unless you think that intelligent life somewhere out there in space could understand our numbers and our writing without some sort of explanation. Maybe they could.

Think what that would be like. Could you understand a message in

Chinese? And what if Chinese were a language that no one on earth spoke? If no one on earth knew the language of a message we received from space, how could we tell that the message was actually a message, much less figure out how to read it?

We have to keep in mind that our languages are things we human beings have invented. Our languages may seem commonplace to us, but we don't know that there are alphabets or numbers out in space. So if we use one of our languages, we have to think about helping other intelligent life decipher our message.

This is a hard problem. And there is no definite solution to it either. Even if we figure out a way to indicate the language of the message, will there be enough space in the message to include the explanation of the language? Even then, how do we indicate that one part is the explanation and the other part is the actual message? This *is* a hard problem, no doubt about it.

Still, let's go ahead and make up our own message. Where do we start? Let's start with the message the scientists are sending out from the Arecibo radio telescope. At this point we may not be able to figure out what this message says, but that doesn't mean we can't use the basic form of it for our own message. Besides, by using the same form the scientists did, we can compare our message with theirs.

Do you see all those little black squares? I am counting the squares and the spaces between them to figure out the physical dimensions of our message. I come up with 23 blank and darkened squares across, and from top to bottom I come up with 73 squares. So we have a message whose dimensions are 23 × 73 squares. Whatever we make that fits into this form would fit what is now going out into space.

EXERCISE 17.4

Draw a rectangle of 23 spaces across and 73 spaces down. •

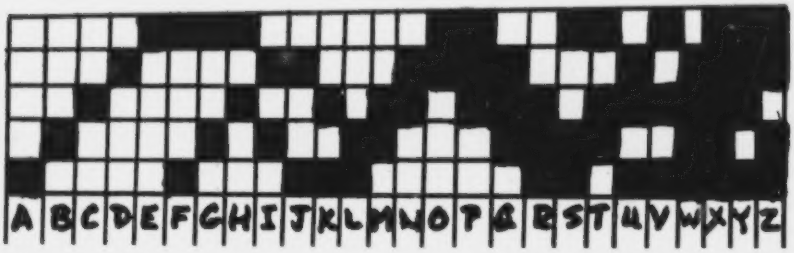
Now *you* decide what to put in it. If you want to make your message entirely pictorial, you darken in the squares to make whatever picture you want to.

I happen to like the idea of including a human figure. I want to include a woman and a man. So I will have two human figures in mine. Do you want to include a human figure?

I also want to include a message. I mean a message of words. I am not going to write the words. I mean, I am not going to write letters in the squares. Instead, I am going to make up a cipher for the letters of the alphabet.

EXERCISE 17.5
Can you think of a way to make up a cipher for the alphabet? •

My response to Exercise 17.5
I hope you have worked out your own way. Here is mine.



I need 26 different combinations of blank and darkened squares in order to represent the alphabet completely. So I write the alphabet from left to right and then start building up combinations of blank and darkened squares until I have a different combination for each letter.

If you were to include a message with words, what would you say? There are so many different things to say, aren't there?

I want to say FROM PLANET EARTH MAN AND WOMAN and then, separately PEACE.

EXERCISE 17.6
Can you write your own message of words in your own cipher? I suggest making it short. •

My response to Exercise 17.6
Figure 23 shows my message in words in the cipher I just showed you. I put it in the message form along with the figure of a man and a woman.

My message is made up of two language systems, one pictorial and the other alphabetical. How about yours? Is yours made up of one? Or two? Or three? Or more?

As simple as I like to think my message is, I wonder if intelligent life out there in space could make anything out of it. Could they tell that one part is pictorial and the other is alphabetical? They *could* tell that

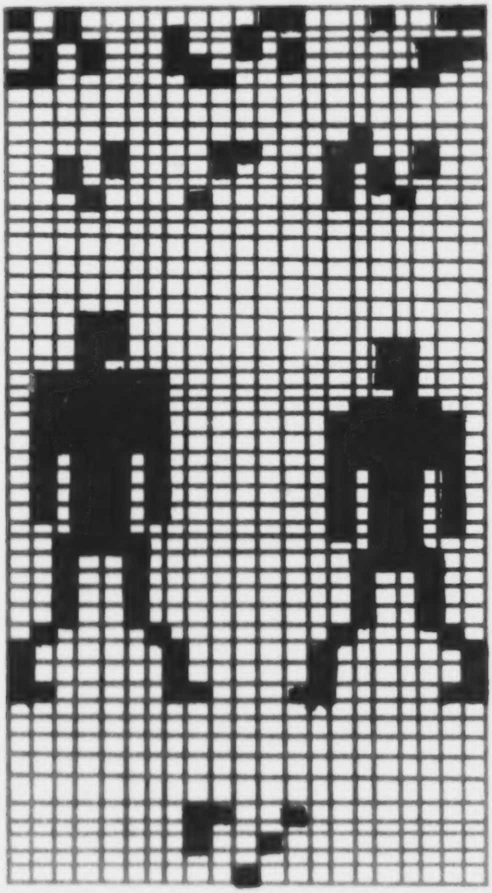


Figure 23

one part is pictorial if they had seen a human being, but what chance is there of that?

And what would they make of the alphabetical part? What would they think those darkened and blank squares mean? Perhaps the message would be clearer if I included the alphabet. I mean the cipher for the alphabet. I could put the cipher of the alphabet along the top, above the message in words.

Then again, maybe it would be better to include a picture of the earth and the sun. Maybe I could indicate somehow that earth is the third planet from the sun. Is that a good idea?

I would also like to include water because it is basic to life on earth. I could include H_2O. But then I would have to make a cipher for 2. This is becoming complicated. I certainly couldn't add all of these possibilities; there wouldn't be room.

I wonder if it is possible that intelligent life could develop elsewhere in the galaxies and develop so far as to be able to receive and send space messages and yet *not* have a written language—or neither a written nor a numerical language. That's a strange question, I suppose. The answer is probably no. But then again, who is to say? If you are sure that the answer must be no, then you are stating your belief of how important language is to intelligent life.

EXERCISE 17.7

Think about this question of sending a message into space. Then look at the message you worked out. How would you change yours, if at all? Either write out your changes or make a new message, using the form the scientists did who conceived the message going out from the Arecibo radio telescope. •

I like thinking about my own message. I hope you enjoy thinking about yours. Still, I'm curious about the message the scientists have sent out. I want to know what it means.

CHAPTER 18

Deciphering Our Space Message

We have worked on deciphering the Arecibo space message. I think we deserve some more help with the meaning of the space message. Look at figure 24. Perhaps it will help us understand the meaning of the space message.

EXERCISE 18.1

Does this diagram help you to understand the space message better? If so, how? •

My response to Exercise 18.1

Yes, it helps because of the words. I know some of the words, but not all. We were right about the human figure, labelled here "earthling." The solar system right below it is meant to be pictorial, too. I didn't recognize it before. I like the way the earth is lifted up a little bit out of the horizontal line of planets and placed right under "earthling." But this image of the solar system isn't as clear as the image of the human figure. Do you agree? You don't have to, you know. "Arecibo" is a word I know because I know about the radio telescope in Puerto Rico from which the

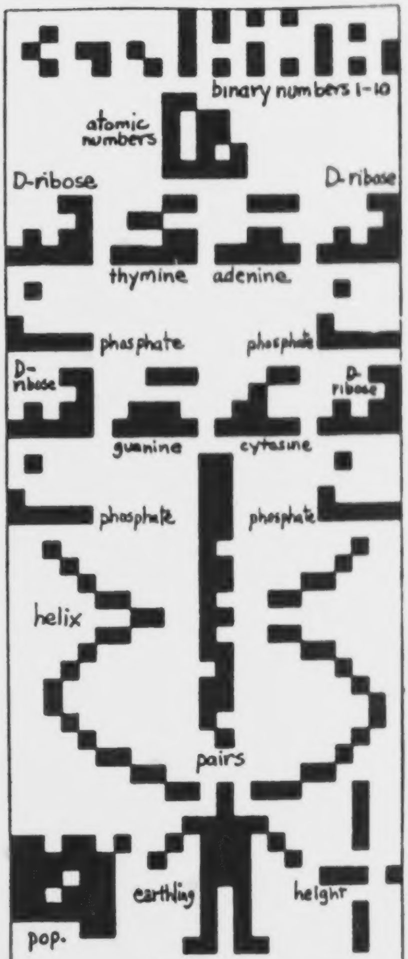

binary numbers 1-10
atomic numbers
D-ribose
D-ribose
thymine
adenine
phosphate
phosphate
D-ribose
D-ribose
guanine
cytosine
phosphate
phosphate
helix
pairs
earthling
height
pop.
earth →
solar system
Arecibo
diameter

Figure 24

message is being sent. Still, without including the words "radio telescope" the designation "Arecibo" doesn't help all that much. The figure above "earthling" marked "helix" is the double helix of DNA, the chemical substance basic to transmitting our characteristics from generation to generation. The double helix is pictorial too, like the telescope, but if you don't know about genetics as a part of the general field of biology, you are not going to understand the picture of the double helix of DNA, even with the word "helix" next to it. To make it as clear as possible, I would identify it as "the double helix of DNA." So, for the pictorial parts of the message, we have the earthling, the solar system, the telescope, and the double helix. But "pop" (population), "height," and "diameter" are obviously all measurements. Therefore, they represent numbers, right? But I can't read these numbers. They must be in some sort of cipher or code, maybe something like the way I worked out a cipher for the alphabet in the last chapter, remember? But maybe we have some help here with these measurements: The "binary numbers 1-10" across the top might be the cipher or code we need. The "atomic numbers" below it and all the scientific terms ("D-ribose," "trymine," "adenine," etc.) might be written in binary numbers. What do you think? You need some knowledge of chemistry to understand this upper part of the message.

That's a long answer. And this is rough going. The space message isn't simple, even with the additional help of this diagram. I am having an easier time with the pictorial parts than the non-pictorial parts. I figure that the rest of the message is represented in the binary numbers 1-10. But beyond this I can't go, not without more help, because I don't know the binary number system. I don't even know if what I am looking at across the top *are* actually binary numbers or if they're the binary numbers in some kind of cipher or code. So I am in a fix. Here I am, given the explanation, at least a partial explanation, and I still can't read the space message! What about someone in space? What about you? Given this explanation and what I have said about my effort to figure it out, what do you make of the message?

EXERCISE 18.2
What do you now make of the space message? Do you have any of the problems that I am having? •

As I keep looking at the space message, it reminds me more and more of beaded Indian belts and Indian drawings. I am thinking of a Navaho sandpainting (fig. 25).

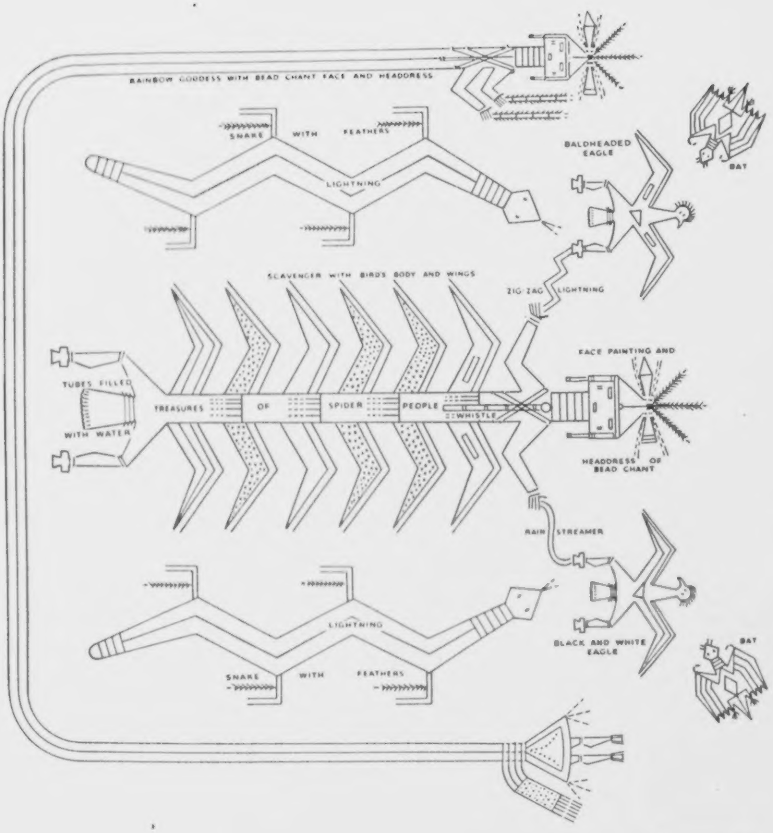

RAINBOW GODDESS WITH BEAD CHANT FACE AND HEADDRESS
SNAKE WITH FEATHERS
LIGHTNING
BALDHEADED EAGLE
BAT
SCAVENGER WITH BIRD'S BODY AND WINGS
ZIG-ZAG LIGHTNING
FACE PAINTING AND
TUBES FILLED
WITH WATER
TREASURES OF SPIDER PEOPLE
WHISTLE
HEADDRESS OF BEAD CHANT
RAIN STREAMER
LIGHTNING
BLACK AND WHITE EAGLE
BAT
SNAKE WITH FEATHERS

Figure 25

This Navaho sandpainting is entirely pictorial, but that doesn't mean it is simple. It isn't simple. Much meaning is packed into the picture—so much meaning that unless you are Navaho or have studied these sandpaintings and the Navaho culture, you would have little chance of understanding the intended meaning.

Think of the problem you have trying to "see" the full meaning of this sandpainting. Then try to imagine the problem someone way out there in space, in another galaxy, might have trying to understand the pictorial parts of our space message.

EXERCISE 18.3
What do you think of sending pictorial parts in our space message? Do you think it is just as good as any other method? •

My response to Exercise 18.3
I don't know how I feel about it. I still like the idea of making at least a part of our space message pictorial, and I also like the idea of including some words. But as to which method (which language system) might be better, I have no idea, and I don't know how anyone could decide. The question remains theoretical—doesn't it?—until we actually get a reply to our actual message and then ask about it.

We have done a lot of work trying to decipher the space message. It's like trying to translate a foreign language, or maybe *two* foreign languages at the same time. We need more help. Here is another "translation" of the space message, another diagram (fig. 26). Perhaps this one will shed some light on the problems we have been having. At least *I* have been having.

EXERCISE 18.4
Does this diagram make the space message any clearer? •

My response to Exercise 18.4
It sure does. The explanations are more complete than in the previous diagram. Also, the substituting of "1" (one) for each dark square and "0" (zero) for each light square allows me to see the binary numbers better.

But I am still not sure I understand. My problem begins with the binary numbers. I don't know what "binary numbers" are, and the dictionary doesn't tell me much more than that they are made up of 0's and 1's only.

Then there's the problem of how to read the ones in the illustration. To read the numbers at the top, do I keep the page straight up and down, as usual, or do I have to turn it sideways? And further down, around the outline of the human being, the numbers are arranged straight up and down, "normally," but at the bottom they look upside down. What gives?

The caption in *Scientific American* (where these diagrams come from) explains that the message has to be turned in three different directions to read the numbers. I wonder why. It seems pointlessly confusing.

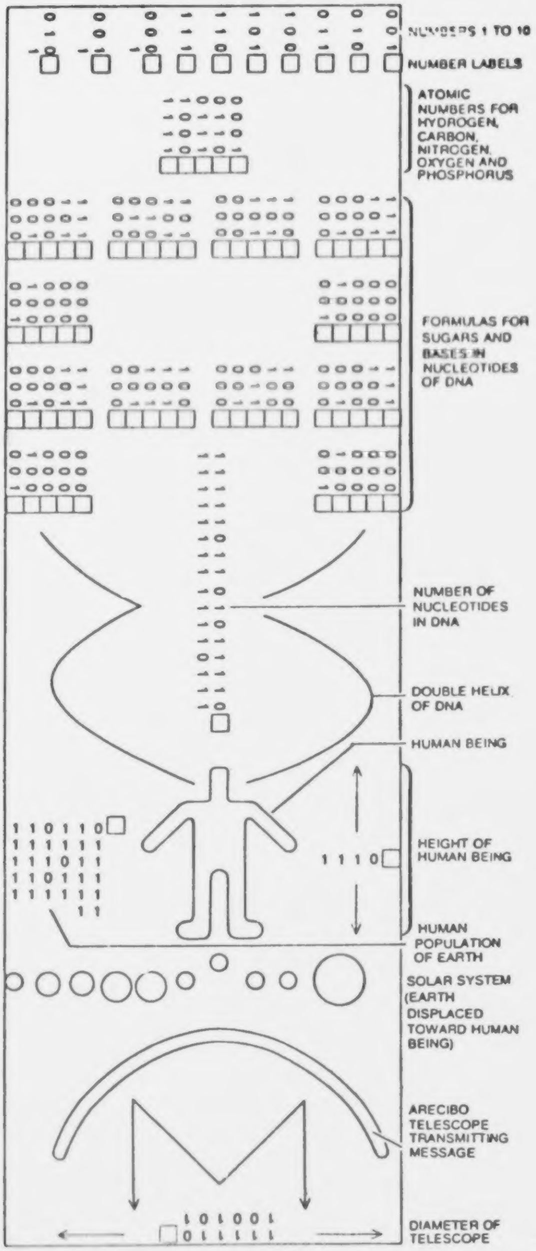

NUMBERS 1 TO 10
NUMBER LABELS
ATOMIC NUMBERS FOR HYDROGEN, CARBON, NITROGEN, OXYGEN AND PHOSPHORUS
FORMULAS FOR SUGARS AND BASES IN NUCLEOTIDES OF DNA
NUMBER OF NUCLEOTIDES IN DNA
DOUBLE HELIX OF DNA
HUMAN BEING
HEIGHT OF HUMAN BEING
HUMAN POPULATION OF EARTH
SOLAR SYSTEM (EARTH DISPLACED TOWARD HUMAN BEING)
ARECIBO TELESCOPE TRANSMITTING MESSAGE
DIAMETER OF TELESCOPE

Figure 26

If having to turn the message in three different ways to read the binary numbers is confusing, we can improve the message. Can you figure out a way to write the numbers in only one direction? Can you combine this change with whatever scientific information from the actual message that you want to keep in yours? You can keep whatever else you decided on including yourself, as long as there is room.

EXERCISE 18.5
Re-do your message or do a new one, keeping the numbers in only one direction. Can you do this? •

My response to Exercise 18.5
My revised space message is in figure 27.

This message is a combination of my previous message and the actual message the scientists sent out. I included the binary numbers; the atomic numbers for hydrogen, carbon, nitrogen, oxygen, and phosphorus; the formulas for sugars and bases in nucleotides of DNA; and the number of nucleotides in DNA. (I don't know what all these are, but I've been told they're important, so I put them in.) I did not include the double helix of DNA or anything below it with the exception of the human figure, to which I added the figure of a woman and the verbal message from my original message: FROM PLANET EARTH and MAN AND WOMAN and PEACE.

I decided to include much of the scientific data because the scientists knew what they were doing, I figured. I picked the scientific data that I thought was the most important. I included all numbers so that they could be written in only one direction. I ran the binary numbers from top to bottom down the upper left side, then arranged the scientific data listed in binary numbers nearby. I then had room left for the man and the woman figure and the verbal message, but I did not have room to include the cipher for the alphabet that I worked out in the last version of the message.

I like this new message because it contains both scientific data and my own personal material. But I don't really think the scientific data and my personal material blend very well. What do you think? I don't know how to make the combination work any better.

What nags me is that the actual message does not include anything we might call a greeting. The message is purely scientific information. What about the people of the earth? What do they have to say? How are

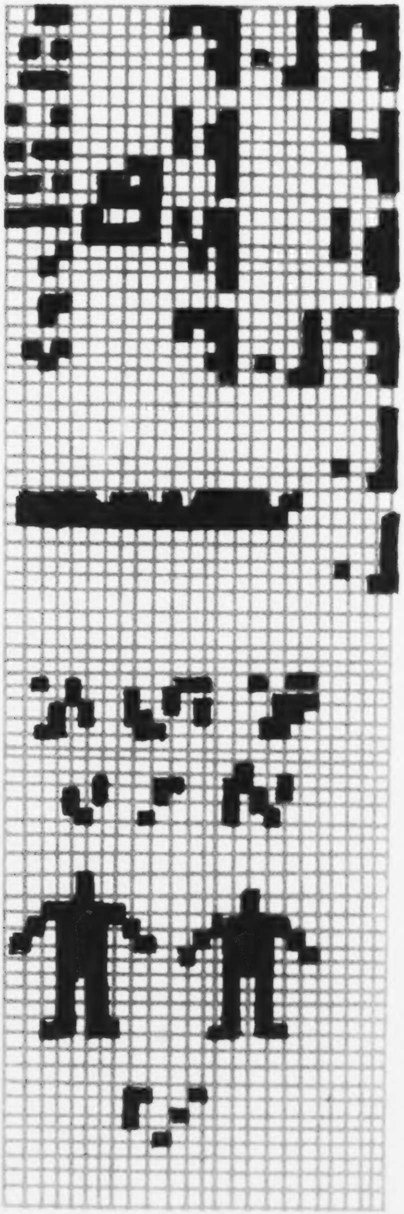


Figure 27

they represented in this message? Aren't we trying to communicate people-to-people (or life-to-life)? I don't like the idea of us here on earth being thought of simply as fact senders. I want more for us.

My objection is based on my belief that the written language is the universal language. I don't think that scientists would agree with this opinion. Scientists would probably contend that mathematics is the universal language, and that therefore our message into space should be basically in numbers.

EXERCISE 18.6
What do you think about this argument about the universal language? Do you think the space message should be basically mathematical, verbal, or even pictorial? •

The problems we have examined in this chapter *assume* that the space message is visual. But is it? Is the signal that the Arecibo telescope sends out basically a picture?

The *Scientific American* caption below figure 26 began: "Arecibo message in pictures. . . ." Do you notice anything here? Why isn't it just "The Arecibo message"? Why are the words "in pictures" added? What do you make of the words "in pictures?" Is it that the message is in some other form and then *changed* into pictures? How can that be? But I guess it's true. What we have been looking at are *pictures* of the message. Here (fig. 28) is the actual message.

We had enough problems before. Now things are even more difficult. And the caption says the message is supposed to be "decoded by breaking up the characters into 73 consecutive groups of 23 characters each and arranging the groups in sequence one under the other, reading left to right and top to bottom." How would we ever figure this out for ourselves? Or, more important, how would other life in the universe figure this out? The scientists didn't explain this part. In any case, this arrangement follows the conventions of language and mathematics as we know them. Each group of 23 characters is arranged one under the other, just as we set lines of writing, and the lines are to be read from left to right.

We come all this way to the message being sent into space and meet again what we started with, the conventions of language. The message is to be read from left to right and top to bottom. I guess the scientists figure that our convention of direction for reading language is as good as any other one.

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1 1 1 0 1 0 0 1 1 1 1 0 0 0
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Figure 28

We have done a lot of work to decipher the scientists' space message. Let's make a list of what has to happen for the message to be received *and* understood. Here is my list:

1. There must be someone or something out there to receive it;
2. The message must be regarded as a message, as an intentional communication by an intelligence;
3. The message must be clearly and completely recorded;
4. The recipient must get the idea to divide the total number of signals ("characters") up into 73 series of 23 characters;
5. These series of 23 characters must be set one under the other;
6. Each series must be read from left to right;
7. The binary numbers must be regarded as the code for understanding much of the rest of the message;
8. The coded numbers must be read from one of three different directions;
9. It must be recognized that not only scientific data can be so represented, but also pictorial parts;
10. The relationship among the coded parts and between the coded parts and the pictorial parts must be recognized (for example the relationship between the picture of the human being and the height of the human being).

You may not come up with all these conditions, and you might come up with some of your own. In any case, there are a lot of conditions. Are there too many?

EXERCISE 18.7
What do you think? Is there a chance of this space message ever being deciphered if it is received? •

This is a very important question to think about. It is critical to communication with other life in the universe, unless, of course, we manage to create a means to travel far beyond our own solar system, or the other life comes to us. As much as we talk about our own space traveling, what captures our imagination even more is the idea of other life coming here to earth. What are your thoughts on this subject?

EXERCISE 18.8
Do you think there is life existing elsewhere in the universe, intelligent life that we might be able to communicate with? •

I wonder what the scientists have to say about this question.

CHAPTER 19

Communicating with Aliens

If you've thought about the questions in the previous two chapters, you have done pretty much all you can to figure out the meaning of the space message and how it is supposed to work. Now, here in the last chapter, you are going to hear from the scientists who made the message. Then you are going to be in a good position to assess their work. And they will tell you what they think of the possibility of communicating with other intelligent life in the universe.

Let's go right to the most important question: could intelligent life develop elsewhere in the universe? Carl Sagan and Frank Drake, who wrote the article about the space message, say:

> From our knowledge of the processes by which life arose here on earth we know that similar processes must be fairly common throughout the universe. Since intelligence and technology have a high survival value it seems likely that primitive forms on the planets of other stars, evolving over billions of years, would occasionally develop intelligence, civilization, and a high technology.

On the basis of what they see as a common pattern for the way in which life might develop anywhere, scientists Sagan and Drake are arguing here for the possibility of life developing elsewhere in the universe. They are arguing on the basis of probability. They try to go farther:

> There might be a kind of biological law decreeing that there are many paths to intelligence and high technology, and that every inhabited planet, if it is given enough time, will arrive at a similar result.

I love the way they snuck "every inhabited planet" in there. But these scientists aren't kidding. Listen to this:

> It is obviously a highly uncertain exercise to attempt to estimate the number of such civilizations. The opinions of those who have considered the problem differ significantly. Our best guess is that there are a million civilizations in our galaxy at or beyond earth's present level of technological development.

A million!

EXERCISE 19.1
What do you think of Sagan and Drake's ideas? •

My response to Exercise 19.1
I don't really know, but I admit that their argument about a possible kind of pattern for the development of life seems pretty sensible. Still, the problem with their argument is that it is about the pattern of developing, not about the beginning of life. I think that the beginning of life elsewhere is more questionable than the pattern it might follow.

Let's see what these two scientists say about sending and receiving signals.

> If they [these other civilizations] are distributed randomly throughout space, the distance between us and the nearest civilization should be about 300 light years. Hence any information conveyed between the nearest civilization and our own will take a minimum of 300 years for a one-way trip and 600 years for a question and response.

From this line of thinking it makes sense to conclude:

> It seems to us quite possible that one-way messages are being beamed at the earth at this moment by transmitters on planets in orbit around other stars.

And what do these scientists think of our capacity to communicate?

> We on earth now possess all the technology necessary for communicating with other civilizations in the depths of space. Indeed, we may now be standing on a threshold about to take a momentous step a planetary society takes but once: first contact with another civilization.

This sounds great, but what about practical problems? To begin with, what about receiving such a signal? Aren't there many many possible transmission frequencies, too many possible "stations" to tune into? How are we supposed to guess which frequency a signal might come in on? Here is what Sagan and Drake have to say:

> To intercept such signals we must guess or deduce the frequency at which the signal is being sent, the width of the frequency band, the type of modulation and the star transmitting the message. Although the correct guesses are not easy to make, they are not as hard as they might seem.

(Would someone who knows about radio transmissions please explain "frequency band." Thank you.)

What about actually looking for the signal? Now *there* is a very practical problem. Their idea:

> When we actually search for signals, it is not necessary to guess the exact bandwidth, only to guess the minimum bandwidth. It is possible to communicate on many adjacent narrow bands at once. Each such channel can be combined to yield the equivalent of a wider channel without any loss of information or sensitivity. The procedure is relatively easy with the aid of a computer.

EXERCISE 19.2
What do you think of what Sagan and Drake have to say about finding a signal coming in from somewhere in the universe? •

My response to Exercise 19.2
I don't know much about radio frequencies. What I understand sounds pretty good to me. Still, clearly, it is basically guesswork.

Do the scientists have any ideas about how such a message might be sent?

> One method of transmitting information, beginning simply and progressing to more elaborate concepts, is pictures.

So the scientists cite pictures as the simplest way to send a message to us. That's interesting. We raised this question in chapter 17. Do you remember? We chose between pictures, numbers, and words, or a combination of two or perhaps all three.

EXERCISE 19.3
Are you surprised that the first way the scientists mention is pictorial? •

My response to Exercise 19.3
Yes. I would have thought that they would choose numbers as the first kind of language for sending a message.

What question is most important to these two scientists? "The real question is not how, because we know how; the question is when." By "when" Sagan and Drake mean "how soon," and they believe that pooling our resources might lead to making contact with other life in the universe "within the lifetime of most of those [people] alive today."

EXERCISE 19.4
Do you think that "when" is the most important question? •

My response to Exercise 19.4
No, I don't think that "when" is the most important question, but I like the positive and imaginative attitude of these two scientists.

Another message was sent out before this radio transmission. It was of a different kind. It was on two engraved plaques attached to a spaceship. Here in figure 29 is a picture of one of the two identical plaques.

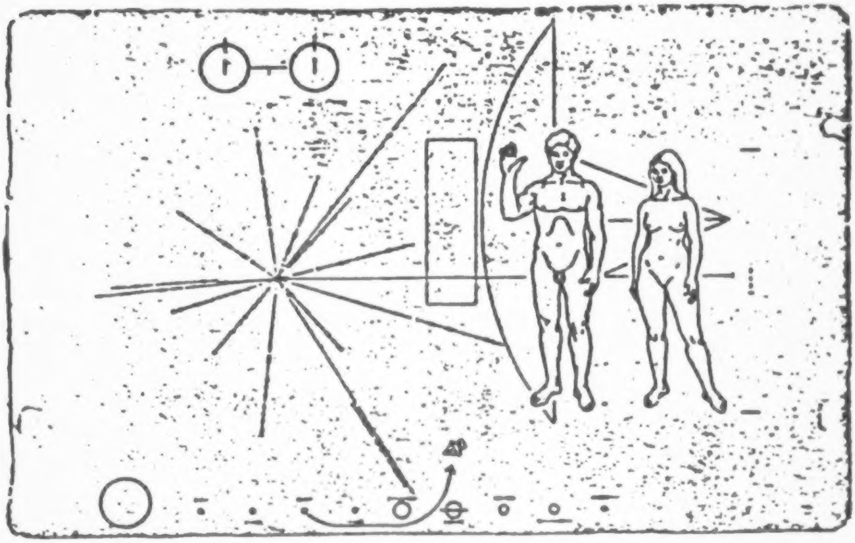

Figure 29

Sagan and Drake included this picture in their article in *Scientific American*. Here is what they say about this previous space message:

> We have sent another kind of message: two engraved plaques that ride aboard Pioneer 10 and Pioneer 11. These spacecraft, the first artifacts of mankind that will escape from the solar system, will voyage forever through our galaxy. . . .
>
> Identical plaques for each vehicle were designed by us and Linda Salzman Sagan. Each measures six by nine inches and is made of gold-anodized aluminum.

Sagan and Drake call these plaques "cosmic greeting cards." Do you like the term? Maybe it is a little corny, but I like it because it feels friendlier than the previous message we looked at.

But what about the plaque as a message? Do you like it? Is it clearer than the other message?

EXERCISE 19.5

How do you like this message? Do you prefer it to the previous one, the radio transmission? •

My response to Exercise 19.5

I prefer this one because it conveys a feeling of welcome. Both human figures are drawn, rather than made out of squares, and the male figure seems to be waving, as if saying hello. I like that.

EXERCISE 19.6

What do you make of its meaning, other than the two human figures? How much more of the message makes sense? •

My response to Exercise 19.6

The only other part of the message that I can be sure about is the line of the sun and the planets that runs along the bottom. I like the little line marking the path of the spaceship. The rest of the message is unclear to me. My guess is that the rest of the message contains information about the origin of the space flight and about life on earth.

Here is what the scientists say about the contents of the message on the plaques.

> These engraved cosmic greeting cards bear the location of the earth and the time the spacecraft was built and launched. The sun is located with respect to 14 pulsars. The precise periods of the pulsars are specified in binary code to allow them to be identified.

EXERCISE 19.7

Do you understand the explanation so far? •

My response to Exercise 19.7

No, I don't. I see "the location of the earth" in respect to the other planets and the sun, but in only this way. I don't understand how the sun is located "with respect to 14 pulsars" because I don't know about pulsars, and I don't see either binary code representation of numbers or a code key of the binary code. In short, I don't get much out of the explanation thus far.

The scientists go on to say:

> Since pulsars are cosmic clocks that are running down at a largely constant rate, the difference in the pulsar periods at the time one of the spacecraft is recovered and the periods indicated on the plaque will enable any technically sophisticated civilization to deduce the year the vehicle was sent on its epic journey. Units of time and distance are specified in terms of the frequency of the hydrogen spin-flip at 1,420 megahertz.

"The hydrogen spin-flip at 1,420 megahertz" sounds great, but I don't have the foggiest idea what it means.

And how long will these plaques last? Will they rust gradually and fall apart? The scientists say:

> These plaques are destined to be the longest-lived works of mankind. They will survive virtually unchanged for hundreds of millions, perhaps billions of years in space. . . . They will show that in the year we called 1973 there were organisms, portrayed on the plaques, that cared enough about their place in the hierarchy of all intelligent beings to share knowledge about themselves and others.

Well, you have seen the plaque and read the scientists' comments. What do you think? Do you like the message? Do you like how it was represented on the plaque?

EXERCISE 19.8
What is your final assessment of the plaque message? •

My response to Exercise 19.8
I preferred it to the previous message originally, but now that I realize that I can't understand about half of the message, even after reading the scientists' explanation, I am not so sure.

A plaque on a spaceship allows us to use pictures, numbers, or words, or any combination of them. Besides, we don't have to deal with little squares; we can simply draw or write whatever we want. I prefer that to working with a radio transmission.

EXERCISE 19.9
Design the plaque for the next space flight out of our solar system. Explain its contents and explain why you chose to include what you did. •

My response to Exercise 19.9
I am going to leave this project entirely up to you and add only a final, personal comment.

As I started to type this chapter, I turned off the television set. The movie *Close Encounters of the Third Kind* was just beginning. I had seen this movie and had liked it.

After typing for a while, I went out to play basketball with some friends. During the game I thought again of the movie. This didn't help my concentration on the game. When I came home, I wanted to take a little break before resuming my typing. I flicked on the television. The movie was just ending.

A remote landing strip in a mountain has been prepared for the arrival of the spaceship. The landing strip is brilliantly lit. As the spaceship descends, the humans send out their welcoming signal. Pictures? Numbers? Words? No, the message is a series of musical chords. (The chords are from a piece by the modern Hungarian composer Bela Bartok.) The chords are played slowly at first — and then, as the spaceship draws near, faster and faster. The humans wait. The silence is huge.

From the spaceship comes the reply, a repeating of the chords of music—the first real communication between the earth and its visitors, the first sign of recognition of human beings by aliens. The final exchange between one of the scientists there and the apparent head of the visitors from space is the scientist's making a series of gestures with his right hand that correspond to the chords, and the alien's repeating the gestures with its right hand.

I love this ending. Not only is it lovely, peaceful, and simple, but the chords and the corresponding hand gestures don't *mean* anything. I mean, they don't stand for anything else. They are not a code, they are not binary numbers. They are just sounds and gestures. They stand for nothing beyond themselves. They convey no information. Yet, to me, they are just right. They are all that is needed, and more would be too much. In that simple exchange is embodied the profound importance of the "encounter" for both the human race and the visiting race.

Sitting there at my desk, I realized why I had been thinking about the movie. I had been thinking about the ending, this communication through sound, through music.

As you know, throughout these final chapters about communicating with aliens, I have expressed my uneasiness with the messages we have sent into space, insisting that these messages present the human beings as senders of information rather than intelligent life gesturing in a friendly way to other intelligent life. To argue my point, I had cited the absence of words in the messages because words can carry the very meaning that I see as missing from our present messages. What the movie showed me, and showed me in my memory of it before I realized it consciously, is that I had forgotten music.

Perhaps music is the universal language, not mathematics. Music is mathematically based and it certainly can be a clear gesture of welcome. Perhaps that is why Carl Sagan and Ann Druyan selected the "world's great music" and put it on discs sent into outer space.

In a visual message, such as the plaque, music is obviously not a possibility, although a hand gesture is. But how about a radio transmission? Do you think music is a good idea for a radio transmission? I love the idea of a sound floating through interstellar space. I don't know if it is possible because I know little about radio transmission, but if it is, all we would need to receive—to know that there is other life—is an echo.

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